

JUNE 1958

UNIVERSITY OF NEBRASKA
LIBRARY

A Buttenheim Publication

JUN 12 1958

SCIENCES

Contractors and Engineers

magazine of modern construction

Machinery



Methods



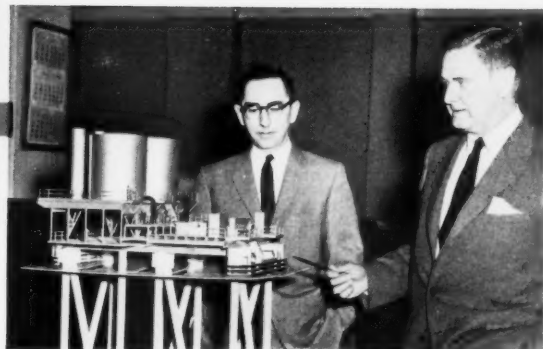
Men



Materials



Maintenance



Management

**EFFICIENCY
and ECONOMY**
Special Issue

No matter WHAT YOUR JOB...



FINE GRADING—Contractor L. C. Smith finish grades 12,000 running feet of slope.



EXCAVATING—A Denver contractor finds Gradall best for digging in rock.



CONCRETE RIPPING—Gradall rips reinforcing rod from old New Jersey road.



TRENCHING—A Cleveland utility digs clean trench for conduit installation.

WHO YOU ARE...



BIG CONTRACT—Gradalls handle footer excavation on Ohio AEC Project.



SMALL CONTRACT—Gradall's offset boom easily handles trenching behind curb.



HIGHWAY DEPT.—Gradall economically cleans a mile of drainage ditch daily.



CITY STREET DEPT.—One of New Orleans' Gradalls rips and loads concrete slabs.

WHERE YOU WORK...



NORTH—Gradall's hydraulic controls accurately position concrete pipe.



SOUTH—Gradall digs ditch along side of new South Carolina highway.



EAST—By tilting Gradall's boom, operator digs out under gas pipe line.



WEST—California Gradall digs 800 yards of fine grade excavation daily.

Gradall®
A Product of
WARNER & SWASEY
CLEVELAND 3, OHIO

CUTS COSTS

ALL YEAR LONG!

© Reg. U. S. Pat. Off.
MANUFACTURERS OF **Gradall**, **Hopto** EXCAVATORS AND **Duplex** TRUCKS

For more facts, use Request Card at page 18 and circle No. 301

CONTENTS

JUNE 1958

Contractors and Engineers

magazine of modern construction



Machinery speeds hot-mix paving.

Page 12



Materials for prestressed construction.

Page 32



Method developed for rock excavation.

Page 60



Maintenance is a full-time job.

Page 74

MACHINERY

- 6 Concrete paver does triple duty on pike
- 12 Crushing, hot-mix plants work fast on three-week job
- 16 Four equipment spreads make short work of grading
- 20 All-electric German tower crane makes U. S. debut

MATERIALS

- 32 "Do-it-yourself" idea applied to prestressing
- 46 Jointless paving projects begin in two states
- 52 Plastics cut costs for contractors

METHODS

- 56 Bridge foundation work speeded by wellpoint system
- 59 Flexibility of welded design shown in "Atomium"
- 60 Rock cuts handled by dozer, tractor-shovel team
- 64 Several jobs use helicopters as "sky hooks"

MAINTENANCE

- 74 Overhaul means rebuild for one contractor
- 82 Firm keeps big fleet rolling and paper work at minimum
- 86 Downtime at dam site averted through checkups on rigs
- 94 Records system: key to equipment upkeep
- 98 Medium-sized contractor depends on informal program
- 102 Maintenance is big business with a big outfit

MEN

- 106 Daring men work high on water tank
- 110 School learnin' for equipment operators

MANAGEMENT

- 116 Field-tested contractor guides international firm
- 122 Aircraft fleet gets executives, equipment to far-away jobs
- 128 Engineers buy time and speed with electronic computer
- 132 Planning and production: job and labor accounts
- 136 Equipment financing can be cheaper than outright buying

PRODUCT PARADE

- 141 Description of new equipment and materials
- 166 Listing of available literature

DEPARTMENTS

- 31 Avoid Legal Pitfalls
- 101 Convention Calendar
- 168 Distributor Doings
- 4 Editorial
- 140 Labor Review
- 176 Manufacturer Memos
- 137 Names in the News
- 172 Publisher's Postscript
- 138 Surveying Washington

There's always something new in construction

To stay in business and make a profit today, a contractor must practice efficiency and economy more than ever. This does not connote penny pinching, by any means. On the contrary, efficiency and economy may demand extra spending in order to acquire new machinery and materials, or to develop new techniques to do the work faster and better. In this annual Efficiency and Economy issue are some of the newer or unusual aspects of construction with reference to the principal subdivisions of the industry—machinery, materials, methods, maintenance, men, and management.

Under Machinery, for example, staff-written job articles highlight the part equipment plays in highway grading and concrete and bituminous paving. Also in this section we report on the use of a crane, new to this country but common to Europe, in building construction. This all-electric tower machine, moving on tracks, is attracting comment at two job sites in the East.

Heading the Materials section is a detailed description of how a contractor turns out prestressed-concrete members at a new plant he has built with one of the longest prestressing beds in the country. The use of continuous steel reinforcing in concrete paving is another subject for discussion.

Variants on the old along with new techniques of construction are reported under Methods. Not everyone will be in a position to save time and money by employing wellpoints, or by putting a helicopter into service for a lifting assignment, but if the need arises here are the answers on how it can be done.

For Maintenance, our staff canvassed the country in person to bring

back the latest news on what construction firms are doing to keep their equipment in shape. Paradoxically, both diversity and uniformity of practice were observed. The very large companies—but with one notable exception—are likely to use a comprehensive system of reports and records to keep close tabs on machinery costs and performance. Where no such formal system is in use, the company relies heavily on key personnel to do the same job.

Contractors differ in their attitudes toward retirement of machinery. Some believe in trade-ins while the machine still has a lot of value; others prefer to overhaul and get the maximum use from the rig before replacing it. A number of contractors adapt new machinery in their own shops, sometimes to improve on the manufacturer's design, but more often to modify the machine for their particular needs.

Generally, these are the trends. Preventive maintenance is vital to profitable contracting. Parts inventories are being cut to a minimum since dealers with well stocked parts departments are located practically everywhere. Maintenance shops are being set up on big jobs, and wherever work is concentrated over a period of years.

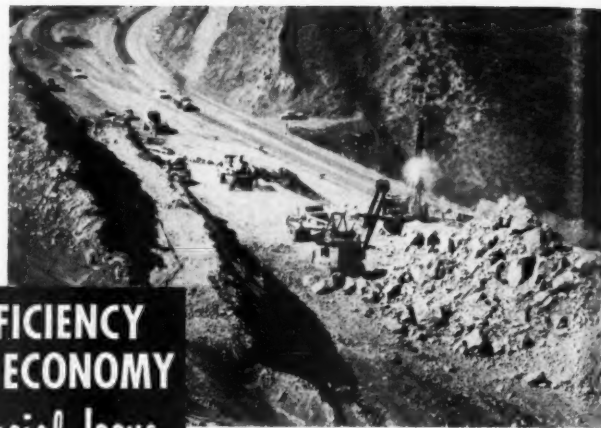
Without Men, machinery, materials, and methods could not be brought together to build anything. How men get

to be equipment operators is no longer a hit-or-miss proposition. Not with schools available to train them. How these schools work is featured in this section.

Behind these other elements is the controlling force of Management. One of the top construction firms of the world and its chief executive are subjects of the lead article under this heading. How another leading international contractor employs a fleet of company planes to advantage is must reading.

Our Research Department came up with an extra for page 5, reporting the results of a survey on buying habits of contractors.

To the foregoing six M's of construction we could easily add another, Merchandising, based on our staff article leading off Distributor Doings. This is a story of how one equipment manufacturer, The Frank G. Hough Co. of Libertyville, Ill., tied sales promotion to an idea for stimulating the economy of the construction industry. The combination produced a 10-mile-long equipment caravan that rolled 1,500 miles over plain, prairie, and mountains from Libertyville to Salt Lake City to give on-the-job demonstrations of earthmoving machines. This is a sign of confidence, not only in the product but also in the whole general economy. It comes at an opportune time.



**EFFICIENCY
and ECONOMY
Special Issue**

CONTRACTORS AND ENGINEERS

A Bittenheim Publication

470 Fourth Ave., New York 16, N. Y.

President and Publisher • Donald V. Bittenheim
Editor • William H. Quirk
Field Editors • Ralph Monson
Anthony N. Mavroudis
William A. Allen
Assistant Editors • William J. Dowdell
William T. Darden
Edward Mannix
Associate Editor • Catherine J. Hearn

Chairman of the Board • Edgar J. Bittenheim
Vice President • George S. Conover
Treasurer • G. E. Carney
Pacific Coast Manager • Albert T. Miller
Southern Sales Manager • Curtis R. Bittenheim
Production Manager • Edna A. Jones
Research Director • Frank Kypreos
Art Director • Peter Caramella
Asst. Art Director • James B. Reilly

BRANCH OFFICES

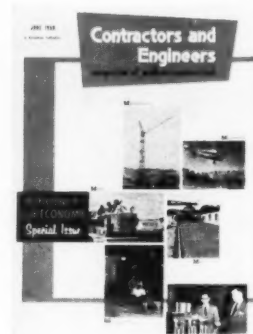
470 Fourth Ave.,
New York 16, N. Y.
Murray Hill 5-9250
Myron MacLeod
Roy T. Wagner
James Stack

Chicago 6, Ill.
2100 Daily News Bldg.
Financial 6-4611
George S. Conover
William J. Adams

Cleveland 14, Ohio
204 The Arcade
CHerry 1-1755
Robert C. Burton

Lookout Mountain, Tenn.
121 North Hermitage
TAYlor 1-2853
Curtis R. Bittenheim

Los Angeles 27, Calif.
1870 Hillhurst Ave.,
NORMandy 5-5143
Albert T. Miller



Cover stories: Machinery, new crane, page 20; Materials, continuous steel reinforcing, page 46; Methods, helicopters, page 64; Maintenance, contractor's equipment, page 94; Men, training schools, page 110; Management, planning projects, page 116.

Associated Publications
The American City The School Executive



Acceptance under Section 34.64 P. L. & R. Authorized at Lancaster, Pa. Vol. 55, No. 6.
\$5 a year, \$1 a copy in the United States and Canada. \$8 a year in other countries. Issued monthly.

©1958 by the Conmart Publishing Corp.
A subsidiary of Bittenheim Publishing Corp.

CONTRACTORS AND ENGINEERS

Who buys the machines that make the profits?

by FRANK KYPREOS, Director of Research

More than on any other single factor, construction profits depend on sound purchasing decisions. Who shares in these decisions? How far up the table of organization do you have to be before you make your influence felt?

A CONTRACTORS AND ENGINEERS survey of the purchasing procedures of 117 construction companies shows that responsibility for contractors' purchasing decisions is shared by a small number of key executives and, depending upon the size of the company, a variable number of top field men. About 10 per cent of the companies also included the master mechanic on the buying team.

The buying team almost always includes the chief executive officer—the president or owner. This is true not only for medium and small companies, as might be expected, but also for large contractors. Of the 57 companies studied that did over a million dollars' worth of business last year, more than 75 per cent said the president or owner actively helped to make buying decisions. Sixty companies under the million-a-year mark mentioned the chief executive 80 per cent of the time.

In the \$10 million to \$50 million-a-year class of companies, where the formal purchasing agent and the equipment superintendent are prominent in the buying picture, the president takes a lesser role: only three out of eight such companies mentioned the president as making buying decisions. But, as elsewhere, one or more top executives—vice president or general manager—and the field men with over-all supervisory authority—the project managers, project engineers, general supers, and construction supers—are on the buying team.

Others who have some responsibility for the kind of equipment, materials, and supplies purchased include the treasurers, office managers, estimators, chief engineers, and foremen. These were cited by both large and medium companies from 21 per cent of the time for treasurers, to 50 per cent for foremen.

Who makes final decision?

When contractors were asked to name "the one man who makes the final decision when your company switches from one brand of equipment to another", few beside the chief executive were listed.

Of 82 companies answering this question, 58 of them, or 71 per cent, listed the president or owner. Only 7 per cent attributed this authority to the vice president, 13 per cent to the general manager, 5 per cent to the treasurer, 2 per cent to a formal purchasing agent. One general super

and one equipment super were listed.

In eight of the 82 companies, final authority rested with more than one person, generally the president and another top executive—a vice president, treasurer, general manager, or a partner. In one large company, the final say was shared by the general manager, the general super, and the equipment super. THE END

Men With Buying Influence

(Per Cent of Companies Mentioning Each)

Titles	Annual Volume	
	Under \$1 million (60 companies)	Over \$1 million (57 companies)
President or owner	80	76
Vice president	21	39
General manager	17	19
Secretary or treasurer	13	21
Formal purchasing agent	2	12
Office manager	3	7
Estimator	5	5
Chief engineer	3	7
Project manager, project engineer, general and construction supers	22	39
Foreman	5	4
Equipment super	2	17
Master mechanic	10	10
Other	7	12

(Photo courtesy Lukens Steel Co., Coatesville, Pa.)

Walt Whitman Bridge

Texaco Asphaltic Concrete paving on this new bridge across the Delaware River at Philadelphia serves 30,000 vehicles a day.

Both needed heavy-duty paving —

both are served by Texaco Asphaltic Concrete



Massachusetts Turnpike

27 miles of this heavily-traveled toll road are paved with a Texaco Asphaltic Concrete surface on an asphalt foundation.

Traffic on these important new arteries is typical in volume and weight of that anticipated on the projected Interstate Highway System.

Hot-mix Texaco Asphaltic Concrete on the Walt Whitman Bridge and the Massachusetts Turnpike again demonstrates its rugged durability under heavy traffic loads. Its performance on such arteries as these strongly recommends this resilient, easy-riding, economical paving for Interstate routes.

Regardless of how the cost of highways is divided between Federal and State governments, the taxpayer foots the entire bill. Consideration for his pocketbook calls for sound economy in highway design. Hot-mix Texaco Asphaltic Concrete paving, in addition to its ability to absorb

punishing impact, costs substantially less than rigid paving. Consequently, it helps the road builder get more mileage out of available highway dollars.

Other advantages of hot-mix Texaco Asphaltic Concrete include the speed with which it is laid and opened to traffic, its immunity to ice-control salts, its skid-resistant texture, freedom from glare and the sharp visibility of traffic lines on its dark surface.

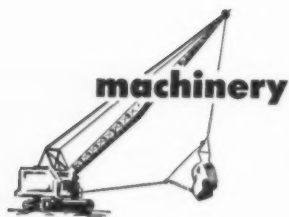
Helpful information for the road builder on all types of Asphalt construction, including hot-mix Asphaltic Concrete, is supplied in two free Texaco booklets. Copies can be obtained without obligation by writing our nearest office.

THE TEXAS COMPANY, Asphalt Sales Div., 135 E. 42nd Street, New York City 17
Boston 16 • Chicago 4 • Denver 1 • Houston 1 • Jacksonville 1 • Minneapolis 3 • Philadelphia 2 • Richmond 11



TEXACO ASPHALT

For more facts, use Request Card at page 18 and circle No. 302



machinery

This Koehring 34-E paver, mixing some 400 batches daily for the Connecticut Turnpike, also sprays water on the base as it moves forward. The spray stops when the paver stops. The paver also pulls a strike-off.



Paver rigged for triple duty

- mixes 400 batches per day
- sprays water on base
- pulls a strike-off

A paver that automatically wet the base course before placing concrete, pulled a strike-off board that trimmed the concrete, and handled an average of 400 batches a day made an efficient operation of paving a 2½-mile stretch of the Connecticut Turnpike near Greenwich, Conn. The road, of reinforced concrete, has two divided 36-foot roadways separated by a 30-foot grassed median, and 10-foot outside shoulders of asphalt.

D. F. MacNamee & Co., Inc., New Rochelle, N. Y., paving subcontractor for Slattery Contracting Co., Mass-peth, N. Y., used a Koehring 34-E paver for the job, and the operator

kept the rig in constant motion to perform the three operations.

Spraybar

Water for wetting down the base course ahead of concrete placing was supplied from the paver's water storage tank and a Mack water tanker pulled by the paver. A 12-foot-long spray attachment, developed by the contractor, covered the 12-foot-wide lanes. It was supported on the outer side boom of the paver, which also handled the strike-off pull cables. The attachment consisted of pipe with holes drilled a few inches apart on the underside.

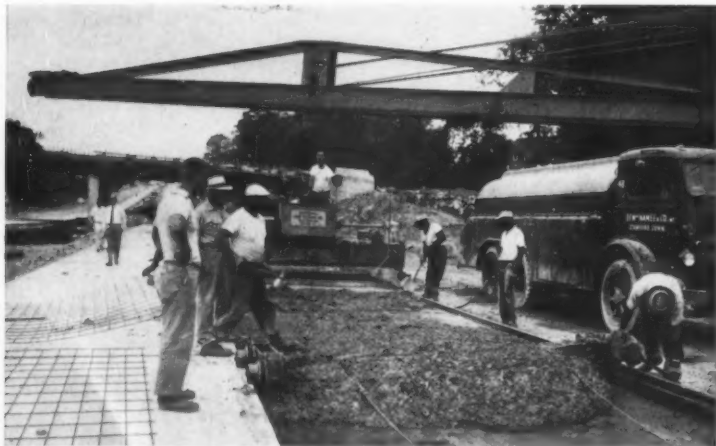
Every time the paver moved forward, a system of valves was activated by the forward levers; when the paver stopped, the spray of water was automatically stopped. This provided a complete and uniform wetting of the base.

Strike-off

The paver dumped concrete in front of the Cleveland strike-off which rode either the forms or the adjacent slab. As concrete was dumped, the strike-off was pulled forward by cables passing through the side boom of the paver. This left the mix at a 6½-inch depth, allowing

workmen to position welded-wire mesh reinforcing 2½ inches below the surface of the 9-inch-thick slab.

This done, the paver dumped additional concrete in front of a new General Road Machines (Chain Belt) double-screed, self-widening transverse finisher. This rig, which can be widened by hydraulic controls and the screed extensions, is equipped with two pneumatic tires and a trailer hitch. When the tires are lowered to the ground and the trailer hitch end jacked off the forms, the finisher can be hooked onto a grader and hauled to another location without an assist from a crane.



Riding a form and a completed slab, the Cleveland strike-off trims concrete to a 6½-inch depth. After reinforcing is placed and covered with concrete, the transverse finisher will move ahead to bring the mix to its full depth.



The entire spread moves along smoothly, the Koehring spraying the base and pulling the strike-off. Working close behind the paver are the General Road Machines transverse finisher and Koehring longitudinal float.



Concrete is dumped ahead of a Cleveland strike-off, which the paver pulls along by means of cables passing through the side boom. After the concrete is leveled to a 6 1/2-inch depth, wire-mesh reinforcing will be placed and the paver will move back to dump more concrete between the forms.

Two vibrators, powered by a generator on the finishing machine, were used to consolidate the concrete.

Following the transverse finisher was a Koehring longitudinal float, which smoothed out the transverse ridges left by the double-screed finisher. The concrete surface was then finished by aluminum straightedges and a burlap drag before the white-pigmented Hunt Clear Cure was sprayed on the concrete surface with an air hose.

To prepare the finished grade of the base course within the forms, the contractor used a Roadgrader Gauge blade extension attached to a Caterpillar No. 12 motor grader. These extensions rode either a completed adjacent slab or steel forms. The desired grade was obtained by adjusting the blade angle and tilt, and then allowing the grader blade to ride on the side forms. The finished grade, checked with a scratch board, was compacted by a Buffalo-Springfield 12-ton 3-wheel roller.

The concrete mix was supplied to MacNamee from a batch plant set up and operated by Cooney Bros., Inc.,

(Continued on next page)

A second lift is leveled to a 9-inch depth by this General Road Machines (Chain Belt) self-widening double-screed transverse finisher. The rig can be widened by hydraulic controls and screed extensions. It has two pneumatic tires and a trailer hitch so that it can be hauled to the next job. No crane is needed to handle the rig.



600,000 YARDS TO MOVE IN 30 DAYS...



150,000 MOVED IN FIRST 4 DAYS!

"I didn't believe it, but it's true," says R. D. McDougal, Jr., of McDougal-Hartmann Co., in speaking about the performance of his equipment spread operating in Illinois. "For example, our DW15s made 75 trips each in four hours over an 800-foot haul. They averaged 12-13 pay yards a trip. This machine really has the power and balance to keep it from getting hung up."

Mr. McDougal is talking about the performance of four Caterpillar DW15 (Series E) Tractors with No. 428 LOWBOWL Scrapers, part of his fleet of 22 big yellow machines moving sandy clay for a factory site. The machines, including D9 and D8 Tractors, No. 12 Motor Graders and other Cat wheel Tractor-Scrapers, kept going 10 hours a day. In four days 150,000 cu. yd. of earth were moved, one-fourth of a project that was expected to take 30 days!

The Cat DW15 packs 200 HP (maximum output), clocks 37.2 MPH, delivers a maximum rimpull of 27,500 lb. It's fast, maneuverable, tough. Works well with the No. 428 LOWBOWL Scraper (13 cu. yd. struck, 18 heaped), or with the Athey PR15 Rear Dump Trailer (14.1 cu. yd. struck, 22-ton capacity). But if you're like Mr. McDougal, you have to see it to believe it. So call your Caterpillar Dealer. See this fast yellow team in action . . . right on your own job.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**HEAVY-DUTY EQUIPMENT
...QUALITY SERVICE...
PARTS YOU CAN TRUST**

For more facts, use Request Card at page 18 and circle No. 303



This batch setup, operated by Cooney Bros., Inc., Newburgh, N. Y., supplies concrete to other turnpike contractors. A Mack truck picks up aggregate for 5 batches at the Blaw-Knox bin,



Any irregularities left in the concrete, after the transverse finisher has passed, are smoothed out by this Koehring longitudinal float.



A Buffalo-Springfield 12-ton 3-wheel roller compacts the base-course material between the paving forms.

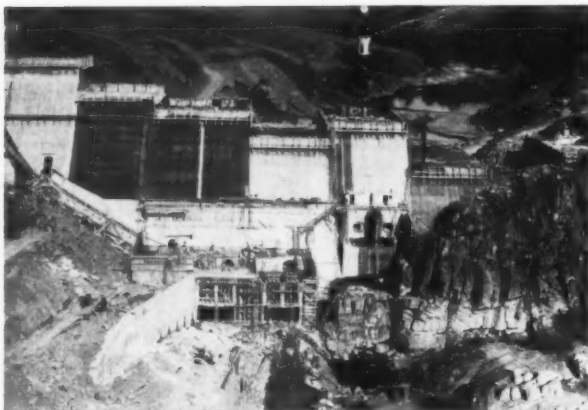
(Continued from preceding page)

Newburgh, N. Y. This plant also furnished concrete to two other turnpike projects. The Mack batch trucks, each with a 5-batch capacity, received the required amount of sand and stone from a Blaw-Knox 4-compartment aggregate bin located in Greenwich. Aggregates were delivered to this main plant site by barges, and unloaded to the aggregate bin or stockpiles by two cranes equipped with rehandling buckets.

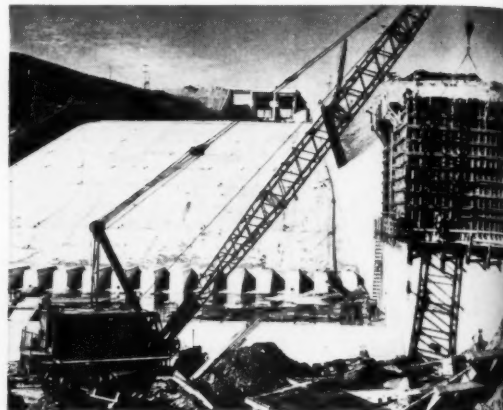
The aggregate bin was equipped with manual batching and weighing controls, but the operator's unique and efficient manipulation of the controls resulted in a production of 100 batches per hour. Here, 1,500 pounds of 2-inch stone, 1,495 pounds of 3/4-inch stone, and 1,545 pounds of sand having 4 per cent moisture were charged to each batch.

The operator handling the manual controls first released a small amount of sand into the weigh batcher before weighing out the different sizes of stone and, finally, the remaining weight of sand per batch. The small initial charge of sand prevented any coarse aggregate from jamming the double-gate discharge.

The aggregate released through the gate of the weigh batcher was evenly dispersed around the sides and back of the cement boxes on the batch truck by a contractor-built spreader. Called the "pants", because of the two large openings toward both sides of the cement box, it also had a nar-



TEXACO PLAN was used from the start in construction of the Tiber Dam on Montana's Marius River. Dam is 205 feet high and 4,300 feet long.



TIME AND CONFUSION SAVED by Texaco Plan kept maintenance low during construction of Tulloch Dam in California.

These 5 great American construction projects use Texaco Simplified Lubrication Plan

These five projects represent hundreds of millions of dollars in construction costs. When you hit these figures, lubrication can be an especially big item. But on any size job, it's not the cost of the lubricants themselves but the difference between *planned* and haphazard lubrication methods that counts. The latter can cause unexpected breakdowns, costly overtime, and ruined equipment. But planned lubrication can speed project completion, minimize downtime, lengthen equipment life. That's why cost-conscious contractors are turning to Texaco's Simplified Lubrication Plan.

TEXACO PLAN SAVED THOUSANDS OF DOLLARS on these jobs. And it can do the same for you. It cuts the number of lubricants you need for all your major lubrication down to no more than six, and it helps you set up an efficient lubricating system for all your equipment. Furthermore, your Texaco Lubrication Engineer will gear the Texaco Plan to your particular requirements.

GET THE WHOLE STORY. Contact your nearest Texaco Lubrication Engineer *soon*. He can show you how much the Texaco Simplified Lubrication Plan has saved contractors in the past—how it can help you in the future. Just call the nearest of more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.



LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

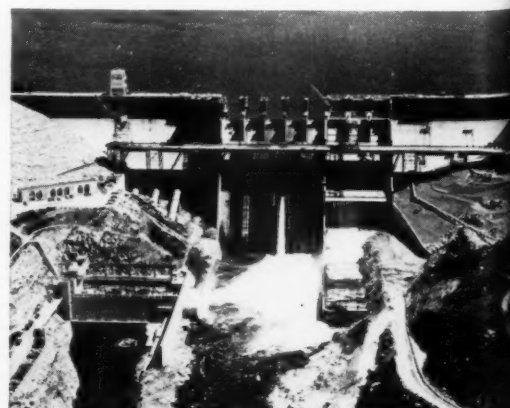
(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)



Cement is picked up by the batch trucks at this setup with 600-barrel silo and 400-barrel bin. It is located at a railroad siding along the haul road.



WELL AHEAD OF SCHEDULE, Columbia River's Priest Rapids Dam is already more than one-third complete. Texaco lubricants are used exclusively.



WORLD'S LARGEST earthfill and concrete project, Folsom Dam on the American River, used the Texaco Simplified Lubrication Plan from start to

CONTRACTORS AND ENGINEERS

row opening toward the back of the box. Aggregate went through these openings and around the box and was kept from piling up at the center.

After being loaded with aggregate, the trucks were driven to the cement bin, which was located at a railroad siding off the haul road to prevent congestion at the main plant. Cement was charged from a Blaw-Knox 600-barrel silo and a 400-barrel bin. Cement was delivered from many sources by bottom-dump rail cars and fed to the silo and bin through an under-track screw conveyor and a 50-foot-high enclosed bucket elevator.

A total of 820 pounds of cement was charged into each cement box of the trucks.

Personnel

Patrick Kelly was the superintendent, and Frank Kelly the assistant superintendent, for Slattery. The chief engineer for the contractor is Leonard Peterson. John Stormfeltz is the resident engineer for Gannett, Fleming, Corddry & Carpenter, Inc., Harrisburg, Pa., the consulting engineering firm on this section of the new \$430 million toll road.

THE END



A Caterpillar No. 12 motor grader equipped with Preco automatic blade control is shown widening a section of U. S. Highway 83, extending from Anson to Hamlin, Texas.

HUNGRY HORSE DAM, MONTANA. TEXACO PLAN PLAYED VITAL PART IN ON-TIME PROJECT COMPLETION.



For more facts, use Request Card at page 18 and circle No. 304

Case history

Automatic blade control saves on grading costs

The use of Preco automatic grader blade control on a section of a surfacing job on U. S. Highway 83, in Texas, saved A & A Contractors, of Olney, a full third in grading costs.

Specifications on this stretch of the work called for a 14-inch parabolic drop on a 20-foot width. Drop progressed at the following rate: 1.56 per cent on the first 5 feet; 3.33 per cent on the next 5; 4.5 per cent on the following 5; and 5.26 per cent on the remaining 5 feet.

Stated contractor Willis Atchley: "When I finished this section, you could dust the blue tops with your handkerchief." He added that, with the Preco unit, he could shape 20,000 feet per day on a 10-foot crown width.

For further information about the Preco automatic blade control, write to Preco, Inc., Dept. C&E, 6300 E. Slauson Ave., Los Angeles, Calif., or use the Request Card at page 18. Circle No. 85.

Food Machinery names

The Florida Division of Food Machinery & Chemical Corp., Lakeland, Fla., has named George L. Mors as Form-Crete sales engineer for the southwestern territory. From headquarters at 2114 Tucker St., Dallas, Texas, Mors services Texas, Louisiana, Mississippi, and the eastern portion of New Mexico.

Universal Form Clamp elects Mayers president

E. L. Mayers has been elected president and chairman of the board of the Universal Form Clamp Co., Chicago, Ill. At the same time, J. I. McClelland was elected general manager and executive vice president.

Universal Form Clamp produces forms, form ties, and accessories for concrete forming.

One reason trains do not have as many accidents as automobiles is that the engineer does not drive with his arm around the fireman.

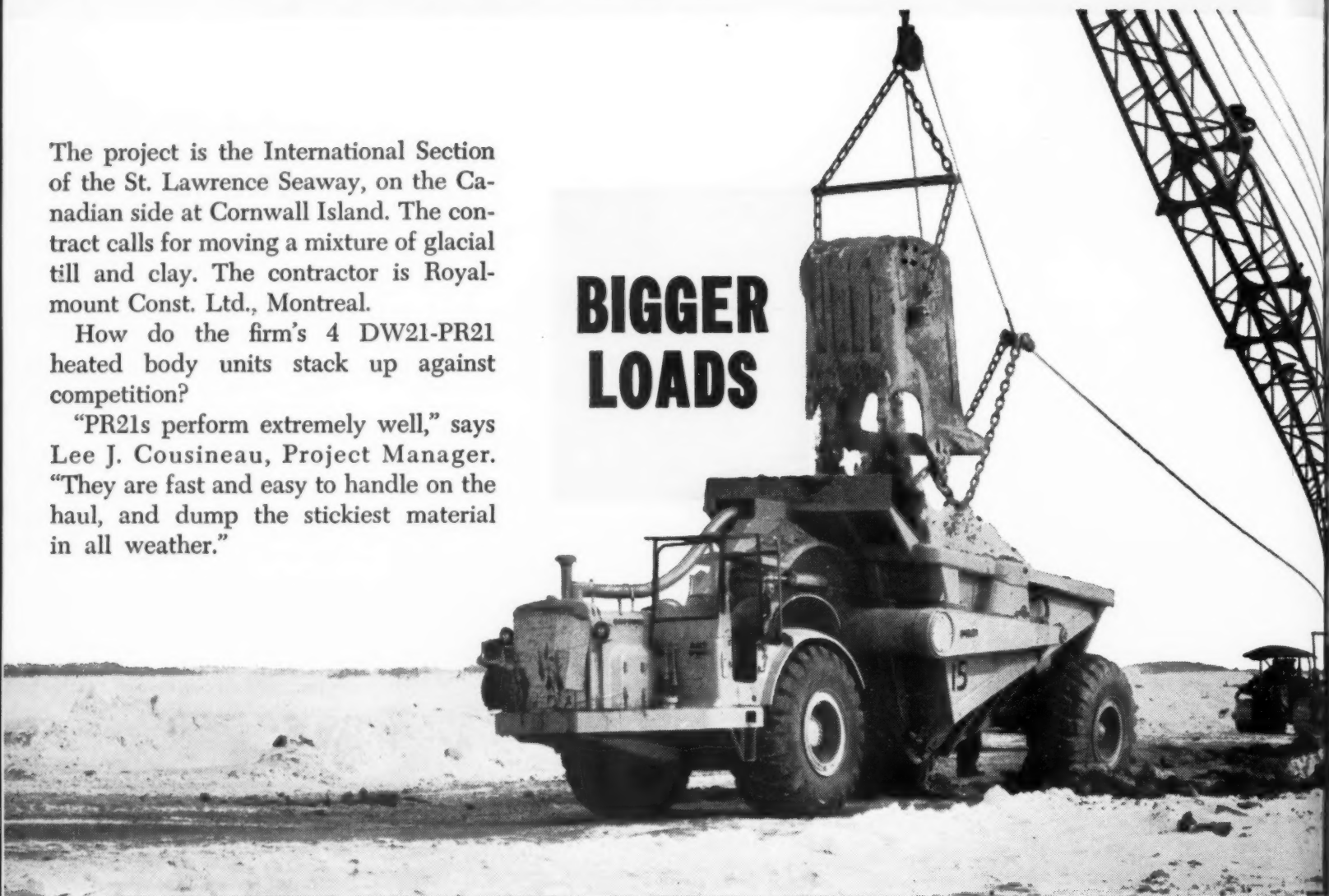
Athey-CAT performs extremely well on Seaway job

The project is the International Section of the St. Lawrence Seaway, on the Canadian side at Cornwall Island. The contract calls for moving a mixture of glacial till and clay. The contractor is Royalmount Const. Ltd., Montreal.

How do the firm's 4 DW21-PR21 heated body units stack up against competition?

"PR21s perform extremely well," says Lee J. Cousineau, Project Manager. "They are fast and easy to handle on the haul, and dump the stickiest material in all weather."

BIGGER LOADS



CLEANER DUMPS

The powerful units pull out of the river bed and up a 400', 12% ramp, high-ball down the 3500' haul, dump and return in 10 minutes. Dumps are made quickly — in about 20 seconds, and cleanly — as the photograph shows.

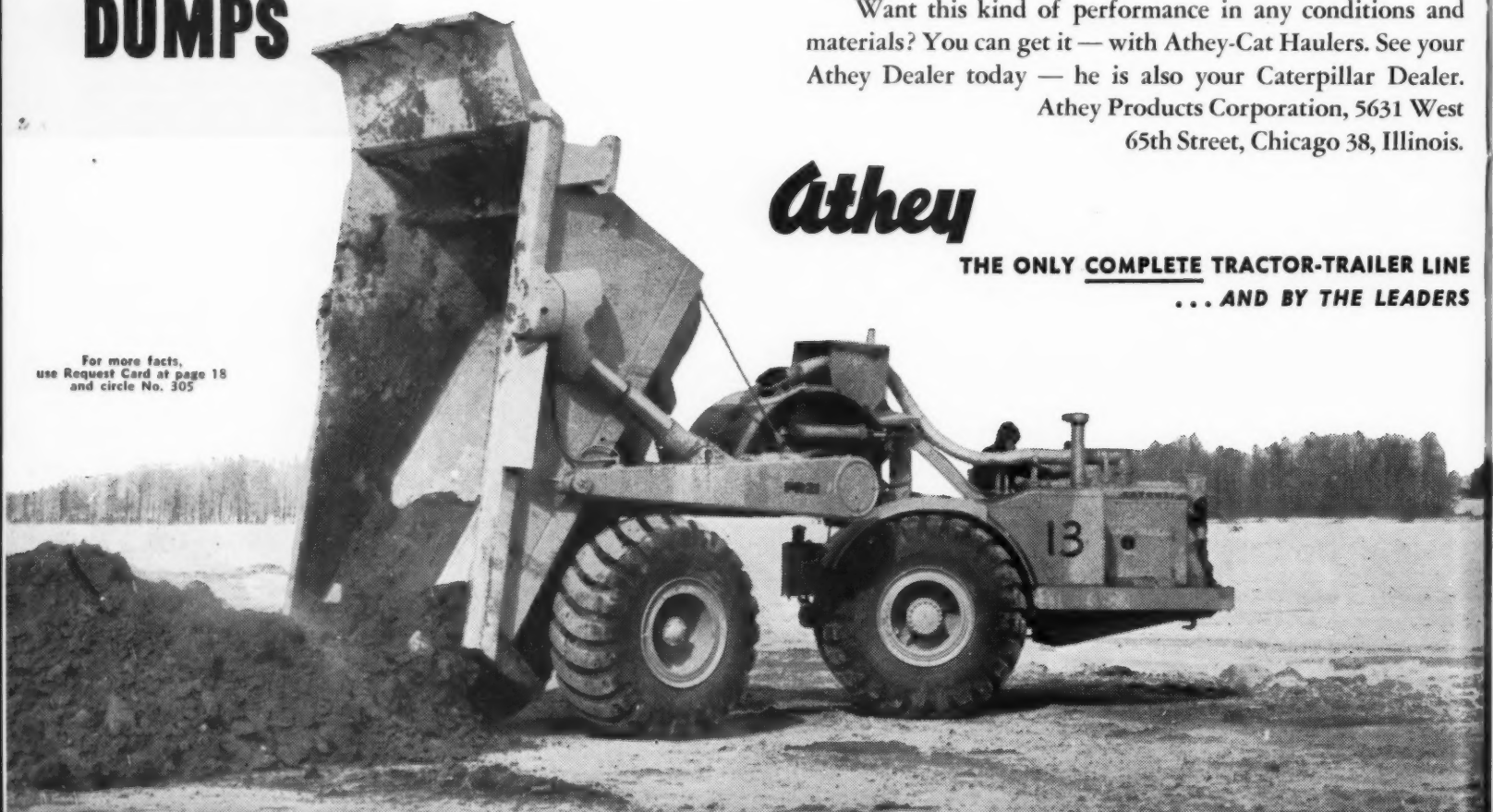
Want this kind of performance in any conditions and materials? You can get it — with Athey-Cat Haulers. See your Athey Dealer today — he is also your Caterpillar Dealer.

Athey Products Corporation, 5631 West 65th Street, Chicago 38, Illinois.

Athey

THE ONLY COMPLETE TRACTOR-TRAILER LINE
... AND BY THE LEADERS

For more facts,
use Request Card at page 18
and circle No. 305



Case history

Time and labor savings with track-mounted drill

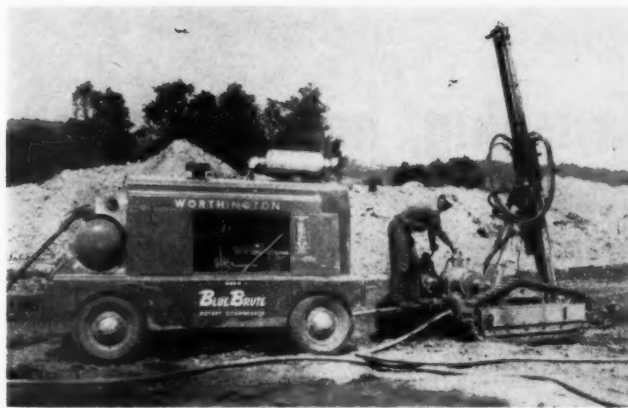
A drilling job that previously required two wagon drills, two 315-cfm compressors, and four men is now being handled by a Worthington Port-A-Trac with a 4-inch drifter, a single Blue Brute 315-cfm rotary air compressor, and one man only, an Ohio crushed-stone supplier reports.

The Mullet Coal Co. & Limestone Quarry, of Mt. Easton, Ohio, used the unit to drill 3 to 6-foot blast holes with a 1 3/4-inch bit, through soft to

medium limestone. The holes were spaced 3 1/2 feet apart.

On this operation, which required 120 to 140 holes per 8-hour day, the Worthington Port-A-Trac obtained 30 to 40 holes per hour, effecting a sizable saving in both time and labor.

For further information write to the Worthington Corp., Dept. C&E, Worthington and Harrison Aves., Harrison, N. J., or use the Request Card at page 18. Circle No. 102.



◀ Shown working in an Ohio limestone quarry, this Worthington compressor and Port-A-Trac drill do the job of two wagon drills with two compressors. In addition, a single operator performs the work. Previously, four men were required for the operation.



An engineer sights through a Berger 18-inch dumpy level on the site of the Permanente Cement Co. plant at Lucerne Valley, Calif.

Case history

Levels remain unaffected by torrid climate, dust

In the construction of the huge new Permanente Cement Co. plant in the torrid desert area of Lucerne Valley, Calif., Kaiser Engineers, Inc., of Oakland, Calif., employed Berger surveying instruments for much of the close-tolerance measuring required in the layout of buildings and placement of machinery.

Berger levels were continually exposed to the blistering sun and swirling dust, but reportedly were unaffected by such punishment. Said the construction firm: "They stayed in adjustment and performed perfectly, without maintenance, in these difficult conditions."

The specific tasks allotted to Berger instruments included laying out the mill building, primary crusher, burner building, and clinker cooler foundations. Rough grade tolerances were held to 0.01 foot, base plates and equipment foundations to 0.007 foot.

For further information about Berger surveying instruments write to C. L. Berger & Sons, Inc., Dept. C&E, 37 Williams St., Boston 19, Mass., or use the Request Card at page 18. Circle No. 30.

April gross income of the Sunshine State Parkway, Florida, showed a 7 per cent increase over the same month last year. This year's \$400,841 was \$27,397 higher than the April, 1957, total.

Where tires are put to the test

You can do more for less

on Tru-Seal Tubeless Rims

Wherever there's work to be done that's really tough on tires—you can be sure of this: You'll get more out of your tires—at lower cost—when they're mounted on Tru-Seal Tubeless Rims by Goodyear.

Tru-Seal is the only practical way to seal a multiple-piece rim. And, like all Goodyear rims, it provides other dollars-and-cents advantages:

Unusual Strength: An exclusive double-welding process and added support at points of greatest stress make present-day Goodyear Rims far stronger than previous rims.

Ease of Tire Mounting: No tube and flap troubles.

Special Tools: Goodyear provides both hydraulic and hand tools especially made for off-the-road equipment.

Bond-a-Coat Finish: This protective coating affords long-lasting resistance to rust and corrosion.

If you have a rim problem, talk it over with the G. R. E. (Goodyear Rim Engineer). He'll save you time and money by helping you select the type and size of rim best suited to your needs. Write him at Goodyear, Metal Products Division, Akron 16, Ohio, or contact your local Goodyear Rim Distributor.



New Tru-Seal Rims—available in sizes 12.00 and up, including all earth-mover and grader sizes. This rim is similar to multiple-piece rims now in use—PLUS airtight Tru-Seal rubber ring which compresses into sealing groove when tire is mounted.



Buy and Specify

GOODYEAR

More tons are carried
on Goodyear Rims
than on any other kind

METAL PRODUCTS DIVISION

Tru-Seal—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

Watch "Goodyear Theater" on TV—every other Monday, 9:30 P. M., E. D. T.

For more facts, use Request Card at page 18 and circle No. 306

Crushing, hot-mix plants work at peak efficiency for three-week paving job



Equipment turns out 27,000 tons of hot-mix
to supply fast-moving spread on 10-mile project



LEVELS OFF High Operating Costs!



Mobil's Contractor PM System and Correct Lubrication Program cut down equipment breakdowns!

More and more contractors are finding out that Mobil's simplified Contractor PM System helps lengthen equipment life . . . reduce wear that keeps equipment in the shop. It's designed to cut down paper work, prevent breakdowns that make costs soar.

This valuable system is an important part of Mobil's Correct Lubrication which also includes:

Famous Quality Products such as Delvac Oils, New Mobilube GX Multipurpose-type Gear Lubricant and Mobilgrease.

Lubrication Engineering Service covering analysis, advice and use of Mobil's outstanding technical know-how.

Your Mobil representative will be glad to show you how useful this system can be. Get in touch with him.

CONTRACTOR PM SYSTEM INCLUDES:

1. Record Folder—provides identifying data for each piece of equipment, holds equipment records.
2. Operator's Recommendation Chart—lists the correct lubrication recommendations for each piece of equipment.
3. Weekly Service & Inspection Report—an up-to-date record of mechanical condition of equipment, work to be done or completed.
4. Delivery Ticket—lists petroleum supplies delivered to equipment on the job.
5. "Squawk" Sheet—used by equipment operator to point out trouble spots that need attention.

Available—film on equipment safety, maintenance.
Call nearest Socony Mobil office.



Correct Lubrication

Another reason you're Miles Ahead with Mobil!

SOCONY MOBIL OIL COMPANY, INC., and Affiliates; MAGNOLIA PETROLEUM COMPANY, GENERAL PETROLEUM CORPORATION

For more facts, use Request Card at page 18 and circle No. 307

When time is a critical factor on a bituminous paving job, the contractor depends on his equipment to work at peak performance. This was the situation with Richardson Construction Co., Miles City, Mont., when it took on the resurfacing of 10.3 miles of U. S. 87 northeast of Great Falls.

Two courses of asphaltic concrete were required. The entire paving job was done in just three weeks. After a 10-day curing period, the seal coat was applied.

The equipment that made the job a success consisted of the contractor's crushing and screening setup, plus the hot-mix plant. These kept the fast-moving paving crews supplied. Richardson's plant was standing at Malta, Mont., 200 miles away from the job, just a week before the work started. One week later it was working near the site of the new job, and by the end of three weeks it had turned out the 27,000 tons of mix needed to complete the paving.

The section of road between Great Falls and Fort Benton had good alignment, grades, and base. It had been surfaced about six years before with a double penetration treatment that had stood up well and was still in reasonably good condition. The \$140,000 resurfacing contract called for the placing of a leveling course where required to true up the old surface, plus a 30-foot-wide first course and a 24-foot-wide second course of asphaltic concrete, each 1½ inches thick. The completed paving was sealed with an application of emulsified asphalt and crushed cover material with a maximum size of ¾ inch.

Richardson selected a plant site at a gravel pit about two miles off the highway near the southwest end of the job. A Pioneer crushing plant was moved into the pit, and the Pioneer asphalt plant was set up beside the crusher stockpile.

Crushing aggregates

The gravel in the pit was nearly dry, creating a very dusty crusher operation, but it provided for ideal hot-mix work. A Cat D8 tractor with U-dozer brought the gravel up out of the pit to a trap. A pan feeder delivered a uniform flow to a 30-inch×60-foot conveyor that fed the Pioneer 40V plant.

Passing through the 10×36-inch jaw crusher and .40×22 rolls of the plant, the gravel was screened in a 4×10-foot triple-deck vibrating screen. A closed-circuit arrangement

CONTRACTORS AND ENGINEERS

Working at a rate of 175 tons per hour, this Pioneer Model 40V crusher turns out minus ¾-inch aggregate for the resurfacing of U. S. 87 near Great Falls, Mont. The plant has a 10×36 jaw crusher and a 40×22 roll crusher in addition to a 4×10-foot, 3-deck screen.



between the screen and the rolls kept the material in the plant until it was all reduced to the minus ¾-inch size. A delivery conveyor carried the finished material out to a surge pile. From here, it was carried into the stockpile by a D8 tractor-dozzer.

The crushing plant was belt-driven by a Cat D13000 engine. It produced the aggregate for bituminous concrete at a rate of 175 tons per hour. This plant also produced the cover material for the seal coating.

Hot-mix plant

The aggregates from the crushing plant were stockpiled over a short recovery tunnel, and a pan feeder delivered them to a 24-inch by 50-foot conveyor belt leading to the dryer of the asphalt plant. The 8×35-foot dryer burning No. 5 fuel oil did not have to be pushed at all to heat and dry the practically bone-dry aggregates as fast as they could be handled by the plant.

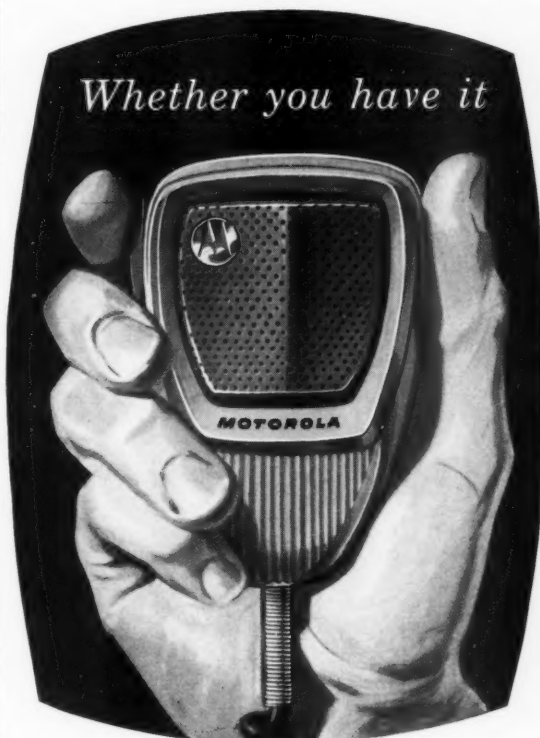
In this Pioneer Model 101 hot plant, the hot elevator delivers the aggregates to a 4×10-foot triple-deck gradation unit, which stands at ground level rather than on a tower. Calibrated pan feeders, in the bins of the gradation unit, feed measured volumes of the two sizes of aggregate to a short bucket elevator leading up to the pugmill.

Hot penetration asphalt is added to the hot aggregates and thoroughly mixed in the 10-foot-long continuous pugmill mixer. This discharges into a gated hopper from which the trucks are loaded. The 150 to 200 penetration asphalt for this job was trucked from the refinery of Phillips Petroleum Co. at Black Eagle, Mont., by a 5,200-gallon semitrailer tanker pulled by an International K-11 tractor. A 3-inch asphalt pump, powered by a Ford 6-cylinder engine, transferred the molten asphalt to the 21,000-gallon storage facilities.

A Hy-Way hot-oil heater circulated hot oil through the coils of the asphalt storage tank and also supplied heat to the pipes and jackets of the asphalt-handling equipment.

With the exception of the pugmill, which was driven directly by a General Motors 6-71 diesel engine, the plant was electrically operated. Three diesel-generator sets, all mounted on one big trailer, supplied the power for the electric motors and controls. One of these was a General Motors 6-71 unit rated at 75 kw. The other two

(Continued on next page)



YOU ARE PAYING FOR 2-WAY RADIO

The cost of *not* having 2-way radio is actually taking dollars out of your pocket every day . . . more money than it would cost to own your own Motorola 2-way radio system. Here's why!

Drivers radio in *direct* from their vehicles—*save* the delay, inconvenience and cost of telephoning. With radio contact, you can move your drivers *directly* from job to job—as they *save* miles, they also *save valuable time*. There's less back-tracking, less "dead-heading"—more efficient use of drivers and vehicles.

AND HERE'S PROOF. Even if your truck costs are as low as \$4.00 an hour (\$2.00 for driver and \$2.00 for truck)—saving as little as *3 minutes* an hour will more than pay for your Motorola radio. Figured on a mileage basis (at a minimum cost of 7c per mile)—saving as little as *10 miles* a day for each truck will pay for more than half of the cost of your Motorola 2-way radio system.

Get the full money *saving*, money *making* story on Motorola 2-way radio . . . complete product line —engineering service—installation—maintenance —lease/finance plans, for every need.



MOTOROLA 2-WAY RADIO

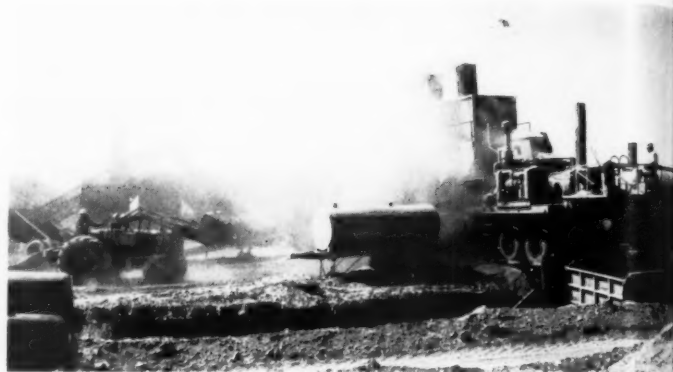
Motorola Communications & Electronics, Inc. • A Subsidiary of Motorola, Inc. • 4501 W. Augusta Boulevard, Chicago 51, Illinois

For more facts, use Request Card at page 18 and circle No. 308



Hot-mix is loaded into an International R-190 tandem truck with Anthony 10-yard box. Aggregates delivered by the hot elevator over the left end of the asphalt tank go into the gradation unit. From there, a bucket elevator carries the materials to the 10-foot-long continuous pugmill mixer.

As another International picks up a load, a Minneapolis-Moline UTI tractor, left, uses a Lull front-end loader to clean up around the plant. Tanks at right furnish storage capacity for 21,000 gallons of asphalt and 8,000 gallons of fuel oil. ▶



PRO OF THE PUSHLOADERS: THE MIGHTY D9



Unbeatable road building team by Caterpillar: DW21 Tractor with No. 470 LOWBOWL Scraper is pushloaded by D9 Tractor

When Ivan Dement, Inc., Amarillo, Texas, contracted to build an 11-mile farm-to-market road in Paloduro Canyon, they knew that the territory was rough and that they'd have to contend with heavy rock and extremely steep grades. But they also knew that their big yellow Caterpillar-built machines thrive on the *hard* work. "We have used Cat equipment for 16 years," comments Murray Gray, vice-president and general supt., "and think it's tops for long life and economy. We also like the service we get from our Caterpillar Dealer."

The D9 is the "big boy" of the Cat Diesel Tractor line. Put the power-packed D9 with 320 HP available at its flywheel behind the 25 cu. yd. heaped-rated DW21-No. 470 Scraper and you've got a road building

team that is packed with profit-making power.

Power-boosted controls and excellent visibility make the giant D9 easy to operate. And it's available with torque converter or direct drive with oil clutch. See your Caterpillar Dealer. He'll show you actual performance records of this pro of the pushloaders and explain how it offers greater production at lower cost per yard. He'll give you a demonstration that will prove it on your job. Service? You'll get the best, as well as expertly made Cat parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**THE D9 PUSHLOADS
BIGGER LOADS FASTER**

LOOK FOR YOUR CATERPILLAR DEALER IN THE



For more facts, use Request Card at page 18 and circle No. 309

(Continued from preceding page)

were Cat units, one a D337 unit rated at 125 kw and the other a D311 rig with a 25-kw rating. A fuel tank built into the trailer supplied all three engines with diesel fuel.

Throughout the job, superintendent George Briner and his crew kept a close watch on the asphalt plant. He and his men checked it carefully before starting each day's run, making adjustments and replacements wherever they felt there was a possibility of failure. The result was a very smooth-running plant, which turned out the mix at a rate of 200 tph with no delays for repairs during the operating day. In fact, average production for 10-hour days was 1,850 tons or better.

Laying and rolling

While the asphalt plant was being moved and set up, an advance crew began applying the tack coat of RC-1 cutback asphalt to the old roadway. A Rosco 1,500-gallon distributor on a Dodge truck applied the fog coat of tack material.

As soon as the plant was in operation, a few loads of mix were brought out and spread by a Cat No. 12 motor grader to level the uneven areas in the old surface. The crew doing this work kept ahead of the pavers on the first course. Then they doubled back and began building the approaches for driveways and crossroads. Driveway approaches were built up to match the first course of the paving. The motor grader spread the mix as it was dumped from the trucks, and a Galion tandem roller applied the compaction.

On the paving, ten International R-190 tandem-axle trucks with Anthony 10-yard dump bodies hauled 16-ton loads of the asphaltic-concrete mixture from the plant to the Barber-Greene finisher. On the first course, the paver laid three 10-foot-wide lanes for a total width of 30 feet. The second course was laid in two lanes with the edges raked out to slope down to match the first course.

The paver moved ahead continuously in one lane for an entire day's run. At the end of the day it was loaded onto a tilt-bed trailer and hauled back an average of 3½ miles, to start the following day's run on the next lane. This was done after hours; no time was lost.

To produce a good tight joint, the roller operators carefully avoided rolling the inside 3 inches of the lane. The next day, when the adjacent lane

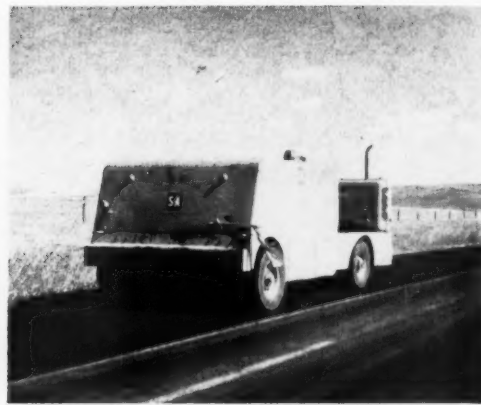
CONTRACTORS AND ENGINEERS



A load of hot-mix is dumped to a Barber-Greene finisher laying the first of three 10-foot-wide lanes. This course was put down to a thickness of 1½ inches. The second course, also 1½ inches thick, was laid 27 feet wide in two lanes.



The first pass is made by a Galion 5 to 8-ton tandem roller. A 3-inch strip is left uncompacted at the inside edge of the lane. When the adjacent lane is laid, the strip will be rolled to provide a tight and inconspicuous joint for the road.



Final rolling of the first course is done by a Seaman-Andwall Model 5620 compactor. Riding on 17 rubber tires, and ballasted to 7 tons for the first course, it rolls a 7.5-foot width in one pass. For the second course, the roller was ballasted to 9 tons.

was laid, the rollers carefully straddled the joint, concentrating their weight on this 3 inches of uncompacted material. The mix was compacted thoroughly under this treatment, giving good densities and producing a smooth joint.

Use rubber-tire compactor

On the first course of the paving, the first pass behind the paver was made with a Galion 5 to 8-ton tandem roller. The second rolling of the course was done by a Seaman-Andwall Model 5620 rubber-tire compactor. This machine, with 17 tires, was ballasted to 7 tons for rolling the first course. The ballast was increased to 9 tons on the second course. The kneading action of the rubber tires produced a very dense surface, and tests showed that the densities of the compacted mix were highly satisfactory. The final rolling was accomplished with a Galion 8 to 12-ton tandem roller.

The method of operation on the second course was very similar to that on the first, but the heavier Galion 8 to 12-ton tandem roller was used in place of the 5 to 8-ton machine. All of the rolling operations were held back a good distance behind the paver to permit some cooling of the mix in advance of the rolling.

Seal coating

After a curing period of 10 days, the seal coat of RS-2 emulsified asphalt was applied at a rate of 0.25 gallon per square yard by the Rosco distributor. A Flaherty self-propelled chip spreader applied the ¾-inch crushed cover material at a rate of 22 pounds per yard. The chips were embedded by rolling with the tandem rollers, which were followed by the Seaman-Andwall rubber-tire roller.

The work on this contract was supervised by project engineer Dale Moore, working out of the Great Falls division office of the Montana Highway Commission. Ben B. Briscoe is the district engineer. Lehman B. Fox is construction engineer for the Commission, and Fred Quinnell, Jr., is State Highway Engineer.

Assisting superintendent George Briner on the project for Richardson Construction Co. were crusher superintendent Roy Poffenberger and truck foreman Donald Dunbar. THE END

"Our LORAINS have given us excellent, dependable service down through the years"

Maxon Construction Company, Inc.

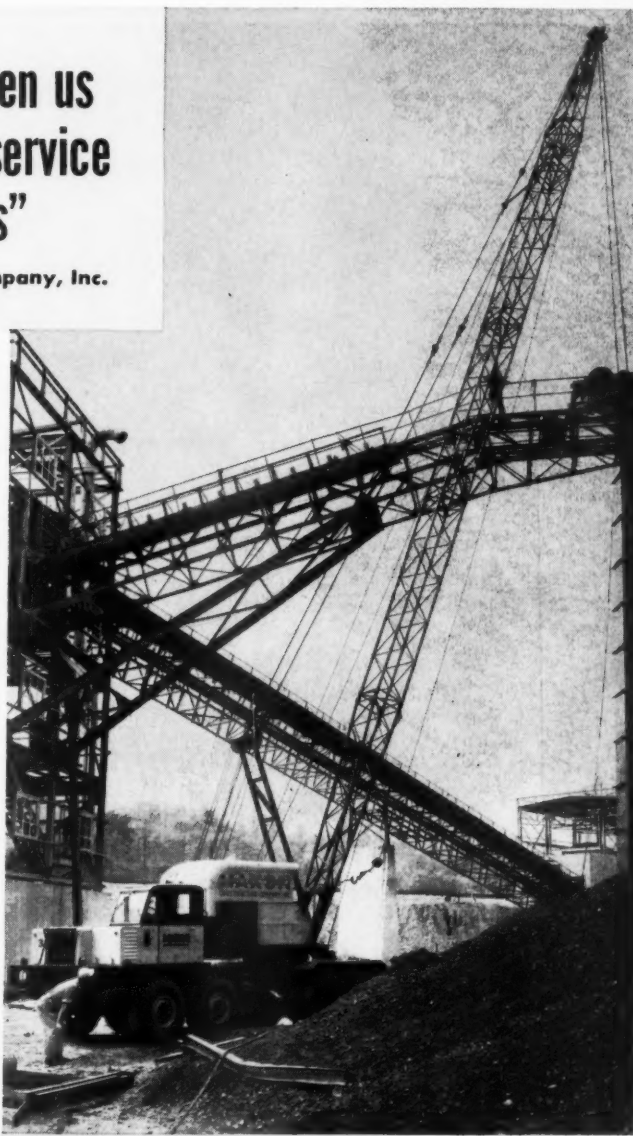
43 LORAINS

purchased by Maxon Construction Company, Inc. of Dayton, Ohio, is the reason for the above statement by Maxon's Vice President C. L. Ohl.

Maxon has purchased Lorains for years, of many different sizes and types, on crawlers and rubber tires, as cranes and as excavators. Their latest is a 35-ton Moto-Crane, model MC-530W, shown erecting a coal conveyor at the Dayton Power and Light Company.

This is the crane that has the reputation of setting the pace on any construction job. It has that *extra* workability in those ranges *where the work is done*. It can carry that *extra* length of boom. It will move in quickly and travel with those *extra* heavy loads.

It has too many features to list them all here. Read about just three Lorain exclusives below. Then ask your Thew-Lorain Distributor to show you all the others. And check, too, on his on-the-spot parts and service facilities that are such a plus value when you buy a Lorain.



1 "SHEAR-BALL" TURNTABLE MOUNTING

for greater capacities

Develops greater capacities. Vertical, horizontal and radial loads and thrusts are carried by over 60 hardened steel balls. Like a huge, sealed ball bearing. It revolves freely and smoothly regardless of load. In use for 8 years.

2 LIGHTER, STRONGER SQUARE-TUBULAR-CHORD BOOM

for greater capacities

Main chords are sealed, square-section tubes, joined with continuous round tubular lacing. This exclusive boom design is lighter, stronger — gives greater capacities, permits longer reaches.

3 "8 x 4" ROCKER BEAM CARRIER

for greater capacities

The optional "8 x 4" carrier has two front axles, doubling the front axle carrying capacity. Rocker beam front axle bogie further increases lifting capacities "on-rubber," without outriggers.

When you see your Thew-Lorain Distributor, ask him about the many other features that have been the reason why Maxon Construction Co. has specified and purchased Lorain equipment 43 times.

THE THEW SHOVEL CO., LORAIN, OHIO, U. S. A.

RELIABILITY IN ACTION THEW **LORAIN**

For more facts, use Request Card at page 18 and circle No. 310



Four equipment spreads make short work of grading

Part of the first spread of equipment on the big Idaho grading job is this Cat DW21 scraper, picking up a load with help from an International TD-24 push-tractor. Alongside, a DW20 waits to be loaded next. This first spread started the cuts.



extra wide-base tread for
**EXTRA
PERFORMANCE!**

the all-new tougher

GENERAL

with exclusive **NYGEN[®] CORD**

L LOGGING
C CONSTRUCTION
M MINING

Only the super-strong General L.C.M. delivers the extra-performance you need to keep jobs rolling on schedule. Built with General's own Nygen cord, the L.C.M. defies the worst job hazards... guarantees deep-down traction and crawler-like flotation with its huskier, wider, heavier tread. Get the extra tire performance that means extra profits on every job. Equip your units *now* with the new wide-base General L.C.M.

THE GENERAL TIRE & RUBBER CO. • Akron, Ohio



Built with exclusive **NYGEN** cord for matchless strength



designed to provide crawler-like flotation and traction



minimum rolling resistance in all kinds of going



precision engineered to reduce operating costs

SPECIFY →



ON YOUR NEW EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 311

Three dirt-moving spreads and another spread on a big rock cut found work no special challenge on one of the largest grading contracts ever awarded by the Idaho Department of Highways. This 1,700,000-cubic-yard project, bid at \$771,029 by Wangsgaard Construction Co., Logan, Utah, involved the grading of 11.15 miles of new alignment for U. S. 26 east of Ririe, Idaho, northeast of Idaho Falls.

The first spread started the cuts, the second continued working them and took care of rock near the bottoms, and the third did the finishing and fine-grading. A separate spread handled the big solid rock cut on the job.

The project was in a relatively flat area, and the new alignment paralleled the old highway. But access was difficult. The new alignment crossed the old road only once, and there were very few intersecting roads. Getting onto the right-of-way without traveling across farmers' fields was a difficulty throughout the job. The problem was particularly severe early in the job, when unusually heavy rains soaked the ground and made travel over the ungraded right-of-way almost impossible. Work was practically suspended for a month until the rains stopped and the ground began to dry. Then, the crew got into high gear, working two 8-hour shifts, six days a week.

The roadway was graded to a 54-foot-wide section in cuts and a 50-foot section on fills. Future contracts will be awarded for the base and 22-foot-wide paving and shoulders. Cuts as deep as 70 feet were made, and fills were built as high as 40 feet. The largest cut contained more than 250,000 cubic yards of excavation, and several of the fills took more than 80,000 cubic yards of material.

Use four spreads

On Wangsgaard's first spread, the production machines were two Cat DW20's, one DW15, and one DW21. These scrapers were helped on the loading cycle by an International TD-24 tractor. Working with the machines on the fills were a Case wheel tractor pulling a Dunn rubber-tire compaction roller, a Cat D4 tractor pulling a sheepfoot roller, and a LeTourneau-Westinghouse-Adams 550 motor grader.

CONTRACTORS AND ENGINEERS

**Rigs work together to beat problems
caused by rain and lightweight clay
soil on large highway project**



A tractor with dozer and Ateco ripper is an important piece of equipment on the second spread, which takes care of the rock near the bottom of some cuts.



Finishing and fine-grading were done by the third spread, which included this White 6x6 truck with a 4,000-gallon tank. Water is being added to the fill material before compactors go to work.

A second spread consisted of two DW21 scrapers, a Cat D9 tractor-dozzer, a D8 tractor that pulled a sheepsfoot roller, and a LeTourneau-Westinghouse-Adams 660 motor grader. The tractor-dozzer had an Ateco ripper. This spread took care of the rock near the bottom of some cuts. The ripper was able to scarify some tough sandrock, which was the kind of material rippers often cut in two furrows. The tractor first ripped deep furrows in one direction, and then swung around and took a cut at 90 degrees. This usually brought the rock out in chunks.

The third spread, on the finishing and fine-grading, consisted of an International TD-24 tractor with a LeTourneau-Westinghouse FP scraper, a No. 12 motor grader, plus a Case wheel tractor with a Dunn compaction roller. One or more of the three water trucks worked with this spread. The three 4,000-gallon water tanks were mounted on White, Kenworth, and Available trucks.

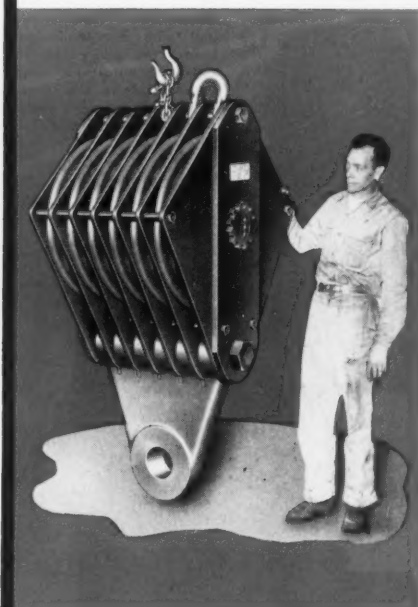
To handle the one big solid rock cut near the westerly end of the job, Wangsgaard brought in a 2½-yard shovel, two Euclid 10-yard end-dumps, two Sterling 12-yard end-dumps, a D8 tractor with a U-dozzer, and a drilling and blasting crew. The end-dumps hauled the rock from the shovel to the bottoms of big fills nearby. Most of the material went into one big fill at the extreme end of the job.

The drilling crew had two wagon
(Continued on next page)



One of the big DW20 scrapers starts unloading at high speed on the fill. Because the light material was difficult to compact, scrapers spread it thin and kept traveling over the successive lifts to aid compaction.

DESIGNED AND
CUSTOM BUILT
TO MEET YOUR
PARTICULAR
REQUIREMENTS



*McKissick Builds
a Better Block
For Every Purpose*



McKISSICK

McKISSICK PRODUCTS CORPORATION
Box 2496 Tulsa, Oklahoma

For more facts, use Request Card at page 18 and circle No. 312



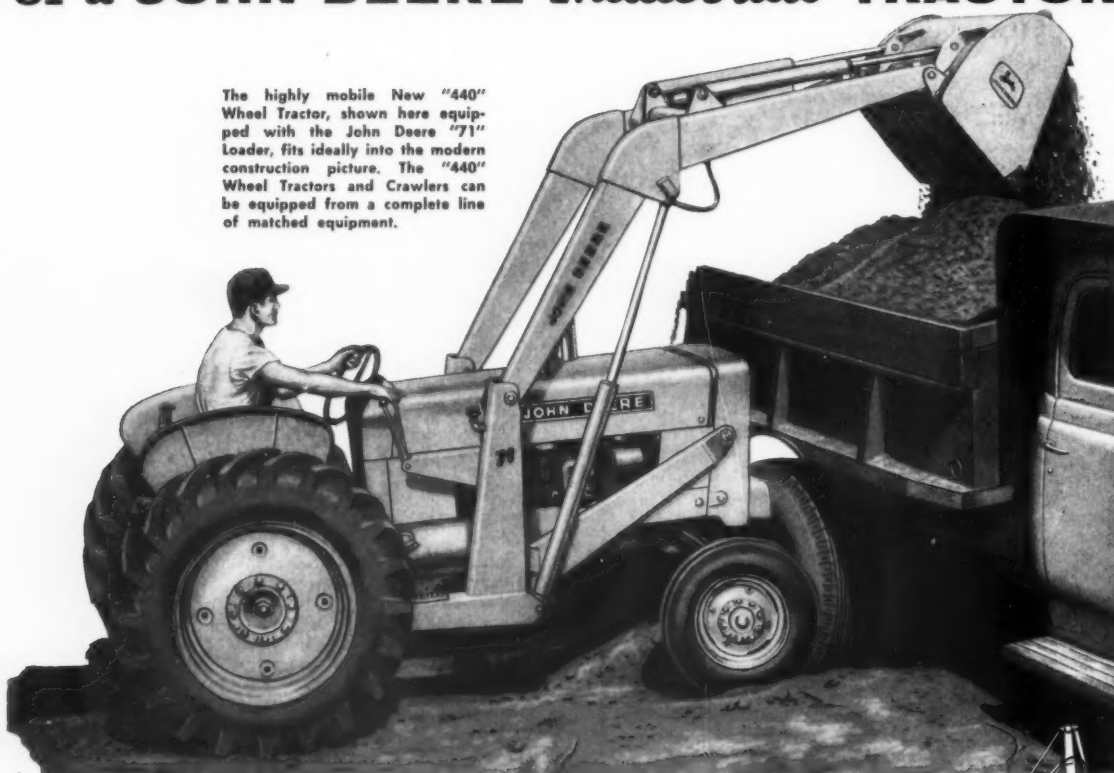
This Dunn rubber-tire compaction roller on the fill is pulled by a Case tractor. The five large tires work well to compact the light material encountered on this job.



A LeTourneau-Westinghouse Adams 660 motor grader, working in the second spread, slopes the bank of a cut. This was tricky work. Every time the blade hooked a rock, the rear wheels slid down the bank and threw the grader out of line.

Never Underestimate the WORK CAPACITY of a JOHN DEERE Industrial TRACTOR

The highly mobile New "440" Wheel Tractor, shown here equipped with the John Deere "71" Loader, fits ideally into the modern construction picture. The "440" Wheel Tractors and Crawlers can be equipped from a complete line of matched equipment.



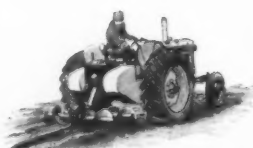
THE amazing quality about John Deere Industrial Tractors is their ability to turn out an amount of work far "above and beyond the call of duty."

Contractors and builders are constantly finding that they can assign to these trim, efficient wheel tractors and crawlers jobs previously thought suitable only for much larger, more expensive units. And now, as John Deere owners, they are counting the benefits in dollars—dollars saved in the initial price as well as in fuel, maintenance and servicing costs.

John Deere Industrial Tractors are rugged, not-to-be-babied power units with an almost unbelievable capacity for work, yet boasting all the nimbleness and versatility necessary in the construction field.

And you have four John Deere models from which to choose—the new heavy-duty "440" and the long-proved "420" in both wheel and crawler models.

The "440" Crawler with Backhoe



"440" Wheel Tractor with Trencher



"420" Crawler with Bulldozer



Completely Engineered for Industry

For more facts, use coupon, or Request Card at page 18 and circle No. 313

SEND FOR FREE LITERATURE

JOHN DEERE—INDUSTRIAL DIVISION
MOLINE, ILLINOIS • DEPT. D205

Please send additional information on items checked:

☐ "440" Wheel Tractor, ☐ "440" Crawler, ☐ "420" Wheel Tractor, ☐ "420" Crawler.

Name

Firm

Address

City State

(Continued from preceding page)

drills powered by a Le Roi 110-cfm compressor and an Ingersoll-Rand 315-cfm Gyro-Flo compressor that was mounted on a half-track.

In addition to the spreads working on the road, the contractor had a Caterpillar D4 Traxcavator and a D6 dozer stripping a gravel pit off the right-of-way. Trucks hauled some 30,000 cubic yards of material from this pit, placing it as select material in areas where the subgrade was soft at grade points between cuts and fills.

Place concrete culverts

The contract included the furnishing and placing of two 90-inch Multi-Plate culverts 142 and 98 feet long, a cattle pass, and approximately 8,000 linear feet of reinforced-concrete culvert pipe in sizes ranging from 18 to 66 inches. The concrete pipe was furnished and laid by Clark Concrete Co., Idaho Falls.

Clark tried to arrange delivery of the pipe so that it could be unloaded from the trucks and placed directly in the trench, which was dug by a backhoe. Depending on the sizes, the pipe was handled by a boom truck or motor crane.

Compaction difficult

The very lightweight clay soil, common to much of the job, proved difficult to compact to the required 95 per cent standard Proctor density. During the early months of the job, the soil's moisture content in the cuts usually ran between 16 and 21 per cent. Since this was slightly over optimum, it was unnecessary to add moisture on the fills.

However, in order to get the compaction, the contractor found it was necessary to spread the material in thin lifts and compact it with both sheepfoot and pneumatic rollers. Lifts were never more than about half a foot, and were usually much less. The scrapers generally started unloading without slowing down, traveling at from 15 to 25 mph. In this way, the material was spread well, and scrapers were able to travel over a large area of the fills for additional compaction.

Each spread used a sheepfoot roller to build the embankments and worked a Dunn pneumatic-tire compaction roller along with it. The Dunn roller has five large tires and can be ballasted to a total weight of 15 tons. This combination achieved the required 95 per cent density.

Once the long spell of rain stopped, the grade dried out very rapidly and the finishing crew always had to add water. When the water was applied, the powdery material immediately became so greasy that traction was difficult. Yet, less than half an inch down, the material was still dry. It was amazing to drive a vehicle on this grade in a hard shower. Windshield wipers worked at full pace, the wheels slid all over the road, and behind rose a cloud of dust.

Superintendent of the job for Wangsgaard Construction Co. was

CONTRACTORS AND ENGINEERS

FIRST CLASS
Permit No. 279
(Sec. 34.9 P.L.&R.)
New York, N. Y.

BUSINESS REPLY CARD

No Postage Stamp Necessary if Mailed in the United States

4c - POSTAGE WILL BE PAID BY

Contractors and Engineers

470 FOURTH AVENUE

NEW YORK 16, NEW YORK

FIRST CLASS
Permit No. 279
(Sec. 34.9 P.L.&R.)
New York, N. Y.

BUSINESS REPLY CARD

No Postage Stamp Necessary if Mailed in the United States

4c - POSTAGE WILL BE PAID BY

Contractors and Engineers

470 FOURTH AVENUE

NEW YORK 16, NEW YORK

Contractors and Engineers - Request Card - June '58

Please send me information on Products and/or catalogs described in this issue, as circled

This card must be received before September 1st for processing.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224																																																																																																																																																																																																																																																												
225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700

Name _____ Title _____
(Please Print)
Company or Gov't Dept. _____
Address _____
City _____ Zone _____ State _____

Contractors and Engineers - Request Card - June '58

Please send me information on Products and/or catalogs described in this issue, as circled

This card must be received before September 1st for processing.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224																																																																																																																																																																																																																																																												
225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700

Name _____ Title _____
(Please Print)
Company or Gov't Dept. _____
Address _____
City _____ Zone _____ State _____

Odell Anderson. The project manager was Dick Peterson. His assistant was Tom Terry. Others of the supervisory staff included grade foreman Thiel Wamsley and Milford Cain, rock foreman William Powell, and master mechanic Jack Richards.

The Idaho Department of Highways was represented by project chief Don Anderson and resident engineer Dale Harding. Blayne Sessions is acting district engineer of the Rigby District, where this project is located. G. Bryce Bennett is state highway engineer, and A. F. Rath, construction engineer for the department.

THE END

Case history

Diesel pile hammer saves on bridge work

Use of a Delmag Model D-12 diesel pile hammer in bridge piling work resulted in a reported saving of approximately 40 per cent in moving and setting-up costs for Ohio contracting firm Wander & Mason, Inc.



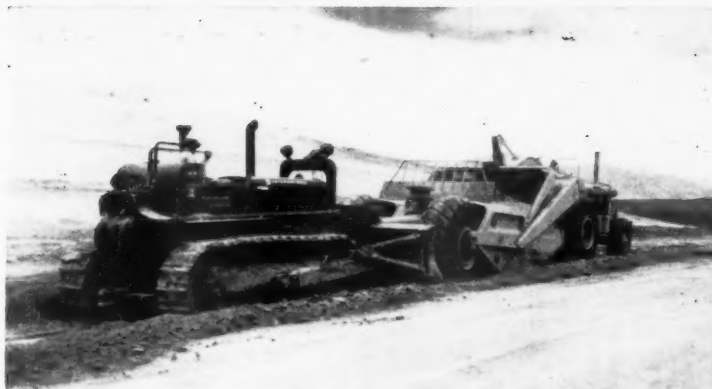
The Delmag D-12 diesel pile hammer is completely self-contained, eliminating the need for air compressors or steam generators, hoses, and a source of water at the job site. Its light weight permits the use of smaller cranes in pile-driving operations.

The operation covered Part 2 of the Spring Sandusky Interchange and Mount Sandusky Interchange, in Columbus. Wander & Mason, of that city, employed the Delmag in driving the foundation pilings for fourteen bridges on the two projects.

The unit's comparatively light weight permitted lighter and more mobile cranes to be used, and its completely self-contained design eliminated the need for an outside power source. The contractor estimated a saving of about 30 per cent in equipment investment alone.

Maintenance and operation costs were also low, the machine burning only 1½ gallons of diesel fuel per hour of operation.

For further information about Delmag diesel pile hammers, write to The Foundation Equipment Corp., Dept. C&E, 100 Elizabeth St., Newcomerstown, Ohio, or use the Request Card at page 18. Circle No. 157.



A supercharged International TD-24 push-tractor with an International dozer push-loads a Cat DW20 scraper on one of the cuts.

Prestressed-concrete span to measure 281 feet long

One of the longest prestressed-concrete bridges in the United States is being built at the Little Falls Pumping Station near Washington, D. C.

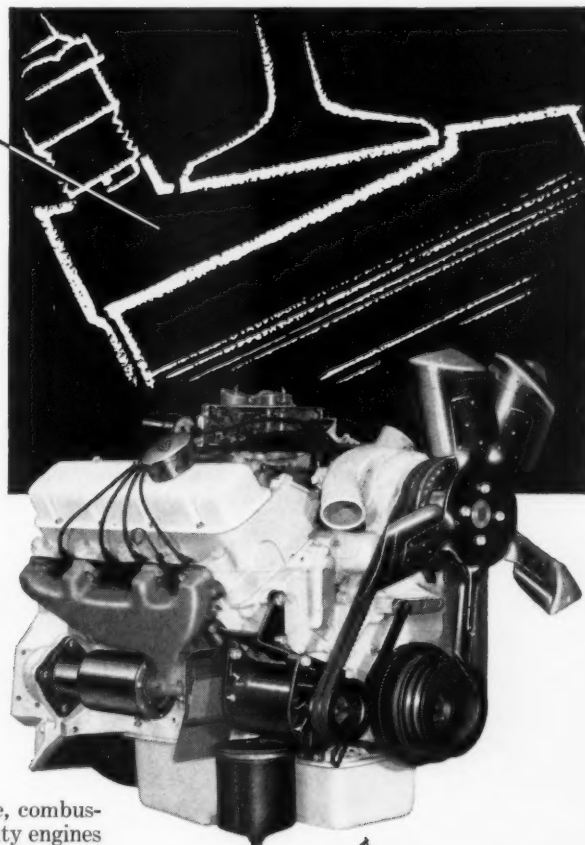
The counterweighted, continuous, prestressed-concrete bridge, post-tensioned by Prestressing Research & Development Inc., San Antonio, Texas, is of box-girder construction with a free span of 216 feet. The 281-foot-long bridge will have a 7-foot-depth at the center, increasing to a 12-foot depth at the supports.

This access bridge for the Washington Aqueduct is being built for the U. S. Army Corps of Engineers by James McHugh Construction Co., Chicago, Ill.

FORD combustion chambers are fully machined for more efficient fuel use . . . longer engine life



Another reason why **FORD** **Super Heavy Duty** **INDUSTRIAL ENGINES** cut costs

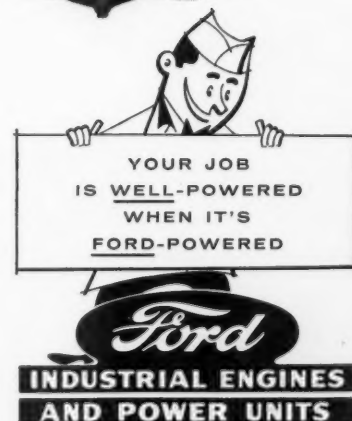


Because they're *fully* machined to uniform size, combustion chambers in the new Ford Super Heavy Duty engines provide each cylinder with an equal volume of fuel-air mixture. This enables the Ford engine to develop greater power from every drop of fuel.

Machining also helps eliminate carbon deposits that cause hot spots and wasteful pre-ignition of fuel . . . gives you the most efficient engine your money can buy.

This is typical of the many engineering advances you'll find in Ford's full line of 4-, 6- and V-8 cylinder engines . . . ranging in displacement from 134 to 534 cubic inches. Included are two modern diesels—the Ford 220-cu. in. Diesel and the Ford 330-cu. in. Diesel. Most models are available as engine assemblies or complete power units, foot- or skid-mounted.

Whatever your application, Ford can power the job more dependably . . . and at less cost.

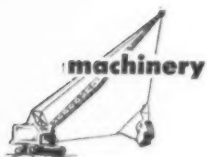


Write or phone today for complete information:

INDUSTRIAL ENGINE DEPARTMENT

FORD Division of FORD MOTOR COMPANY, P. O. BOX 598, DEARBORN, MICHIGAN

For more facts, use Request Card at page 18 and circle No. 314



German tower crane makes bow in U. S.



Dwarfing a conventional American crane, this largest model of the German-made Universal tower crane works at the site of the 23-story Hilton hotel under construction in Pittsburgh's Gateway Center. The rig has a 165-foot tower and a 125-foot boom.



The first Universal tower crane used in this country pours concrete for the foundation of the 6-story Sheraton hotel in Binghamton, N. Y. The crane may be operated from the base or from either of the cabs on the tower.

An all-electric tower crane, whose special features are mobility and long reach for handling materials on building projects, has recently been introduced in this country, and is currently being used in the construction of two reinforced-concrete hotel buildings in eastern states.

The rig, also known as a slewing (revolving) crane, is an import from West Germany. Called the Universal crane, it has been used in Europe for many years, but had not been seen in this country until this year.

The principal feature distinguishing the Universal crane from cranes built in this country is its vertical tower or mast, having the boom fixed

at the top. With the boom working at angles of 15, 45, or 70 degrees, or anywhere in between, the crane is able to reach out over the top of a building project, even at times to the opposite side from which it is working.

The undercarriage is mounted on railroad-type wheels which ride on a wide-gage track. The track may be laid along one side of the project where the crane is to operate, or it may even completely surround it.

Ease of operation

Four operations—lifting or lowering the load, booming, revolving, and traveling—may be performed simultaneously. The crane is operated by

cut concrete costs up to 6%...eliminate call-backs...



Compact sub-base with Maginiss POWR-FACTOR!

Maginiss vibratory compaction assures uniform density of sub-base...eliminates voids...prevents loss of mortar...reduces concrete required up to 6%! And, compacted sub-base stops slab settling and cracking...eliminates expensive call-backs for repairs.

Find out how Maginiss Powr-Factors will cut concrete, labor and call-back costs on all your jobs. See your Maginiss distributor today! Maginiss Power Tool Company, 154 Distl Avenue, Mansfield, Ohio.

Maginiss Power Tool Company
154 Distl Ave., Mansfield, Ohio
Yes, I want to know more about the Powr-Factor for compacting sub-base.

name _____
address _____
city _____ zone _____ state _____



MODEL PP-18 POWR-FACTOR.
Up to 7,000 vpm, 4,000 lbs.
adjustable force, gasoline powered.

For more facts, use coupon, or Request Card at page 18 and circle No. 315

Need HOSE in a HURRY?

Suction • Water • Steam
Air • Multi-Purpose
Discharge • Pile Driver

Wherever your job is—whenever you need hose—there's a Continental Warehouse nearby stocked to give you any kind of hose you want—when and where you want it.

There's no need to wait for distant shipments—no need to stop the job—no need to lose profits.

Any time you need hose call Continental. You'll like the fast service and dependable quality you get from these warehouses:

- | | |
|---|--|
| ATLANTA 5, Ga.
477 Eighth St., N.E. | INDIANAPOLIS 4, Ind.
309 North Capitol Ave. |
| BALTIMORE 18, Md.
15 East 21st St. | LOS ANGELES 23, Calif.
3121 East 12th St. |
| BOSTON (Alls.34), Mass.
12 Franklin St. | MEMPHIS 3, Tenn.
268 Madison Ave. |
| CHICAGO 10, Ill.
10 West Hubbard St. | NEW YORK 7, N. Y.
81 Murray St. |
| CINCINNATI 2, Ohio
49 Central Ave. | PHILADELPHIA 6, Pa.
311 North Randolph St. |
| CLEVELAND 15, Ohio
2731 Prospect Ave. | SAN FRANCISCO 24, Calif.
1325 Egbert Ave. |
| DETROIT 27, Mich.
13801 Schoolcraft Ave. | ST. LOUIS 8, Mo.
4018 Olive St. |
| | SYRACUSE 3, N. Y.
739 Montgomery St. |



CONTINENTAL SUPER-HIGHWAY HOSE
This hard working, high-pressure water hose has top grade rubber tube wrapped with frictioned duck thoroughly bonded to tube and cover. Red rubber cover resists abrasion, cutting, gouging. Sizes: 1/4", 1/2", 2", 2 1/2", 3", 3 1/2", 4". Ask for latest catalog showing full line of CONTRACTORS HOSE, HOSE FITTINGS, BOOTS and CLOTHING.

HOSE by CONTINENTAL

CONTINENTAL RUBBER WORKS • 1989 LIBERTY ST. • ERIE 6 • PENNSYLVANIA

For more facts, use Request Card at page 18 and circle No. 316

CONTRACTORS AND ENGINEERS

simple hand controls from the base or from cabs halfway up and at the top of the tower. On the larger models, remote control from anywhere on the project is possible. This feature gives the advantage of operator visibility at any stage of construction.

Automatic overload safety devices switch off the current when the load is too great, when the boom is too high or too low, when the hook is wound too tight, and when the crane approaches the end of its track.

Smaller models of the tower crane may be transported over the highway simply by folding the boom down against the tower, lowering the tower to a horizontal position, and placing a pair of rubber-tire wheels beneath the undercarriage. The crane is then hooked up to a truck-tractor or other prime mover, and rear steering is possible on curves just as with a hook-and-ladder fire truck.

Although the crane has been used in dam work and to some extent in bridge construction, its principal use is in handling materials on building projects. In concrete pouring, for example, the rig is said to eliminate the need for material hoist towers, concrete carts, runways, and additional labor since it places concrete directly to a pour anywhere on the project.

Seven models

The Universal crane is made in seven models, the largest having a lift capacity of 11½ tons and working to heights of 333 feet. This maximum capacity requires a skyscraper attachment—a second boom which is attached to the end of the first boom as a sort of jib.

The Model 921 H, the largest of the seven sizes, is presently at work on the 23-story Hilton hotel going up in Pittsburgh's Gateway Center. This \$15 million project, with Turner Construction Co., New York City, as gen-

eral contractor, is expected to be completed at least a month ahead of schedule, using the new crane.

This model, one of only ten of its size in existence, has a 165-foot tower and a 125-foot boom. It is pouring concrete with a 2-yard bucket, and has a lifting speed of 230 fpm. The crane rides on a section of straight track 195 feet long.

As the Pittsburgh project nears its final height, the crane will probably be fitted with the skyscraper attachment to enable it to reach to the full 333-foot height.

Raises tower itself

This large model was brought to the site on seven railroad cars. After

it was assembled, the crane used its own power and cables to raise its tower and boom in a matter of 15 minutes.

The large crane weighs about 60 tons, and uses 40 tons of gravel ballast in two boxes at the side of the undercarriage. These may be emptied quickly by trapdoors if the crane is to be moved.

The first of the Universal cranes to be put to use in this country is pouring concrete on the new Sheraton hotel under construction at Binghamton, N. Y. The 6-story building is being erected by Sordoni Construction Co., Forty Fort, Pa., under a \$1,300,000 contract.

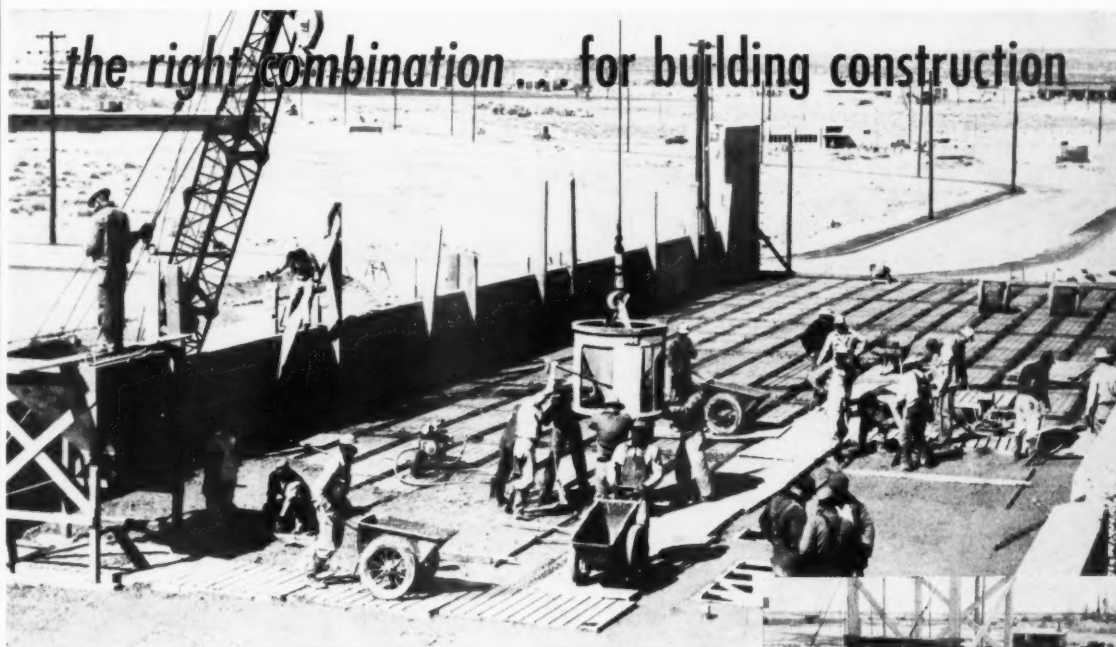
The crane working at Binghamton is the Model 40/50, the third largest

in the line. It has an 88-foot tower and a 78-foot boom; weighs 21.7 tons; and uses 17¼ tons of ballast. Capacity per boom angle is 3,500 pounds at 15 degrees, 4,090 pounds at 45 degrees, and 7,220 pounds at 70 degrees. Hoisting speed is 180 fpm with a 3,500-pound load.

Maintenance of the crane is simple: eight points on the flange wheels of the undercarriage must be oiled daily; other parts require lubrication only once every four months.

Orders for purchase or lease of ten more of the cranes have been placed since the first two models were placed in operation here.

Universal Mfg. Co., Zelienople, Pa., is the agent for distribution of the crane in this country. THE END



Here's how Gar-Bro balances concrete supply and demand...

Don't play the concrete construction game with a "pick up team" if you want to win profits. It takes a "pro team" of carefully selected concrete handling items to do each job efficiently and without costly delays.

The versatility of Gar-Bro's complete line of Concrete Handling Equipment permits you to pick a "pro team" every time—and to balance the productivity of the placing crew and the finishing crew with the concrete supply.

In the top picture, Gar-Bro buckets, floor hoppers and concrete carts were divided between two separate crews. One for mass concrete handling and one for slower paced slab work requiring finishing. Thus each crew set their own separate pace and prevented any costly delays.

Gar-Bro floor hoppers can be

converted to receiving hoppers for use with elevators as shown at right. Thus a crew with Gar-Bro power-carts can be continuously supplied with concrete on any floor of multi-floor building construction.

Gar-Bro buckets provide the fastest concrete delivery and two buckets per crane are far more efficient than one. No ramps or runways are required thus offering a big saving.

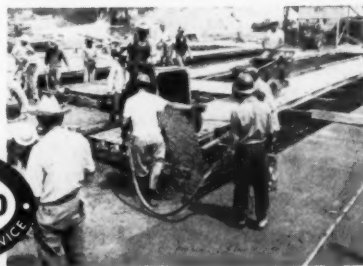
Concrete placing has become a science in the past ten years and only careful planning and proper equipment can guarantee adequate profits. For suggestions and methods of concrete handling write for a copy of the Gar-Bro Concrete Handling Manual with Check Lists: Gar-Bro Manufacturing Co., 2415 E. Washington Blvd., Los Angeles, California.

A Gar-Bro receiving hopper is used to receive concrete at base of tower and another as a tower hopper to charge Gar-Bro power-carts at floor level.



Two Gar-Bro concrete buckets per crane eliminate the delays in loading and placing concrete.

Where distances from mixer to pour are 200 to 1000 ft. the speed of Gar-Bro power-carts offers an economical method of delivering concrete.



GAR-BRO MANUFACTURING CO., Los Angeles, California • Peoria, Illinois
General Offices: 2415 East Washington Blvd., Los Angeles 21, California

GAR-BRO The world's most complete line of
CONCRETE HANDLING EQUIPMENT



For more facts, use Request Card at page 18 and circle No. 318



SEND COUPON FOR INFORMATION

Economy Forms Corporation
Box 128, H. P. Station
Des Moines, Iowa

Please send literature on Economy Footing Forms, and address of nearest sales office.

Name _____

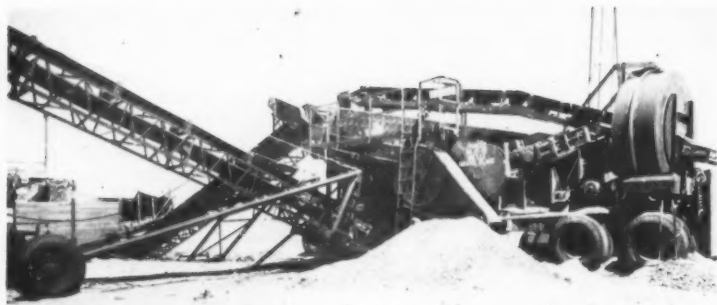
Firm name _____

Street address _____

City _____ State _____

For more facts, use coupon or circle No. 317

JUNE, 1958



Cowart's Pioneer 45-VE duplex gravel plant crushed and screened an important fraction of rock coming from the secondary crusher. Use of this portable unit helped blend material to tough specifications; boosted tonnage.

Case history

Portable plant does extra duty on road job

By using a portable Pioneer 45-VE duplex gravel plant in connection with other portable auxiliary units, road-building contractor O. D. Cowart, Albuquerque, N. Mex., reportedly has produced stationary-plant state highway specification sizes on a mobile basis in some of the state's most inaccessible locations.

Late last year, the firm finished a \$1,213,000 four-lane divided highway job ahead of schedule, despite heavy quantities of crushed-rock materials needed. Plans called for 104,000 tons of 2-inch-minus subbase; 40,000 tons of 1-inch-minus leveling course; 37,000 tons of ¾-inch-minus hot-mix

aggregate; and 1,500 tons of shoulder chips. The production was in solid malapi.

Several other portable components were used with the 45-VE plant to boost production to 300 tons per hour. The auxiliaries included a Pioneer 30×3½-foot apron feeder, a Pioneer 153-PRL primary crushing unit with a 3042 jaw crusher, a portable secondary plant with a 2540 jaw crusher and scalping screen, and a 1952 model Pioneer 46-VE duplex portable plant. Assembled, this combination gave maximum flexibility in routing material properly to meet specification grades for four sizes.

A primary advantage of the 45-VE plant itself was its full 96 square feet of specification-size screening area in a four-deck arrangement.

According to Cowart, performance of the 45-VE is equally effective on a single-unit setup.

For further information write to Pioneer Engineering, Division of Poor & Co., Dept. C&E, 3200 Como Ave., Minneapolis 14, Minn., or use the Request Card that is bound in at page 18. Circle No. 122.

Case history

Large savings realized with hydraulic crane

On a job involving 40 and 45-foot lengths of 6-inch cast-iron pipe at the Wright-Patterson Air Force Base in Dayton, Ohio, the contracting firm of Helldoerfer-Castellini realized savings of more than \$100 per day with an Austin-Western hydraulic crane.



This Austin-Western hydraulic crane, shown at work at the Wright-Patterson Air Force base at Dayton, saved the Helldoerfer-Castellini company over \$100 per day. The machine's precise hydraulic control proved ideal for the delicate handling required.

The pipe, oil-filled under pressure, and containing high-tension cable, required unusual care in handling. This is where the exact hydraulic controls of the crane proved their worth, according to the company.

The \$100 per day saving is a comparative estimate based on a crane rental figure of \$18 per hour. Breaking the figures down further, the company estimated that the machine's cost per day was \$7 less than the wages of a crane operator.

For further information about this hydraulic crane, write to Austin-Western, Construction Equipment Division, Baldwin - Lima - Hamilton Corp., Dept. C&E, Aurora, Ill., or use the Request Card at page 18. Circle No. 158.

**ANNOUNCING NEW
FIRESTONE
RUBBER-X**

**THE LONGEST
WEARING RUBBER
EVER USED IN
OFF-THE-HIGHWAY
TIRES!**

New kind of rubber builds new cut-resistance, longer wear into every off-the-highway tire!

Tires built with Firestone Rubber-X defy slugging impacts and ax-edged snags to lower equipment downtime as no other tire material can. Combined with Firestone S/F (Shock-Fortified) Nylon, Firestone Rubber-X literally armors tires against costly impact damage. Built into a special tread design, this new rubber delivers new

pull power for the worst bed or road conditions. You'll find Firestone Rubber-X off-the-highway tires outwork and outwear any other tires made! Ask your Firestone Tire Expert about these *tubed or tubeless* off-the-highway tires made with Firestone S/F (Shock-Fortified) Nylon and Firestone Rubber-X. *They're available at no extra cost.*

Firestone

BETTER RUBBER FROM START TO FINISH

Copyright 1968, The Firestone Tire & Rubber Company



RIB EXCAVATOR® ROCK GRIP EXCAVATOR® ALL TRACTION® LOGGER

For more facts, use Request Card at page 18 and circle No. 319

what's it worth

to have Maneuverability



this **DAVIS RIG** knows no **EQUAL!**



EXCLUSIVE FLUSH-DIGGING! Entire mast and boom assembly shifts from center to either side for flush digging alongside buildings, fences, by trees, and other obstructions. Only Davis offers this advanced feature!



YOU ALWAYS FACE YOUR WORK! Seat and control assembly is mounted on mast assembly... swinging to face the job regardless of operating angle. You work fast because bucket is visible, controls at your fingertips.

Maneuverability more than any other factor governs the time you take to complete a job. That's why you're money ahead with the advanced maneuverability features of a Davis Loader-Backhoe!

Close-in Design Lets You Work in Tight Situations — Your Davis rig hugs close to the tractor — top, bottom, and sides. You have no obstruction to mar your vision. Lets you work with minimum clearance.

Better Visibility Lets You Maneuver with Speed and Accuracy — You don't "feel" your way with a Davis... You see the work area clearly as you shuttle from load to dump.

Alert Controls Let You Handle Machine with Ease — All controls are independent and located for fingertip convenience... respond lightning-fast to your touch. Ease of handling reduces operator fatigue to increase production.

Works Where Others Won't — The Davis Backhoe's exclusive flush-digging feature and ability to dig at any angle up to 200° often lets you complete a job in the time it takes other makes to get into position.

Davis Loaders and Backhoes are available for all popular models of International, Ford, Fordson Major, Ferguson, Case, Massey-Harris, Allis-Chalmers, Oliver, John Deere, Minneapolis-Moline, and Work Bull Tractors.

SOLD AND SERVICED EVERYWHERE BY BETTER DEALERS

For the name of your nearest dealers write direct.

Please specify make of tractor.

MASSEY-FERGUSON INDUSTRIAL DIVISION

1009 S. WEST STREET

• WICHITA 13N, KANSAS

For more facts, use Request Card at page 18 and circle No. 320



The Trojan 154 heaps the bucket with bank-run gravel before starting on its 150-yard uphill climb to charge the crusher hopper. The tractor shovel makes up to 200 trips daily at the Residential Transit Mix plant, Westbury, N. Y.

Case history

Loader saves time, money at transit-mix plant

At the Residential Transit Mix Corp., Westbury, N. Y., operating costs were cut by a minimum of \$70 per day by use of a Trojan Model 154 tractor shovel.

Prior to the purchase of the Trojan, a ¾-yard crane and a hired truck were used to charge the hopper with sand, gravel, and bank-run gravel. The crane loaded the truck from the stockpiles, after which the truck climbed a steep hill to the hopper, 150 yards away. The cost to hire the truck was \$70 per day for an 8-hour day.

The obvious solution was to procure a single piece of equipment that could handle the entire operation.

According to Residential, it takes the Trojan 154 only three minutes to complete the entire load-dump cycle. The unit makes 160 to 200 trips per day, charging the hopper with 320 to 400 yards of material—enough to keep the plant in operation for a full day, during which it turns out approximately 350 yards of concrete.

For further information about the Trojan 154, write to The Yale & Towne Mfg. Co., Contractors Machinery Division, Dept. C&E, Clinton St., Batavia, N. Y., or use the Request Card at page 18. Circle No. 136.

Cassaro joins Prescon

Michael A. Cassaro has joined The Prescon Corp., Corpus Christi, Texas, as a structural engineer. Cassaro formerly worked for the city engineer of Troy, N. Y.

The Prescon Corp. produces concrete post-tensioning tendons for use in buildings, bridges, and other structures.

Conrad, Inc., expands

Conrad, Inc., Holland, Mich., a subsidiary of Crampton Mfg. Co., plans to build a third addition to its present plant, for the manufacture of environmental test chambers for temperature, altitude, and humidity. The addition will permit building three walk-in-size altitude-temperature chambers simultaneously. The test chambers are made for the electronics, aircraft, and nuclear fields.

Case history

Special screed handles bridge-finishing problem

A bridge-finishing problem was recently solved with a special Stow screed.

Structures Inc., of Greenville, S. C., had to strike off some wide concrete bridge decks on a highway between Lakeland and Tampa, Fla. The span measured 28 feet 3½ inches, with a parapet reinforcement at each end.

The rails for any screeding device have to be mounted over points of no

deflection; in this case they had to be mounted over the parapet reinforcement. A screeding machine was required that would cover the span, yet ride on the rails located 11 inches above the concrete surface.

A special underslung vibration screed was ordered from the Stow Mfg. Co. Because this was such a long span, and the concrete was stiffer than 2-inch slump, two Stow Power



Caterpillar DW20 (Series E) Tractor with No. 456 LOWBOWL Scraper is pushloaded by a D9 Tractor equipped with a pushcup. With eight other DW20s it is working on construction of runways,

taxiways and other facilities at Bergstrom A.F.B., near Austin, Texas. Altogether, the DW20s are getting up to 20,500 cu. yd. in a 20-hour working day on hauls of 1 to 2½ miles round trip.

Job report on Bergstrom

Nine DW20 Tractors and 17 other pieces of CAT-built equipment are at work on this 2,370,000 cu. yd. project.

Near Austin, Texas, the H. B. Zachry Company is building runways, taxiways and other facilities for the new Bergstrom Air Force Base. This is a big operation—2,370,000 cu. yd. of excavation. In addition, it calls for 300,000 yd. of select base material and 503,000 yd. of concrete pavement.

The runways are 12,250 feet long, 300 feet wide.

Work started in April, 1957, and is being handled by nine DW20s (Series E) with No. 456 LOWBOWL Scrapers, two D9 Tractors, six D8s, two D7s and seven No. 12 Motor Graders.

The DW20s are getting up to 20,500 cu. yd. in a 20-hour working day. Rough material, too—clay, limestone conglomerate, shale and black gumbo. Round-trip hauls have varied from 1 to 2½ miles.

had to
et rein-
ine was
ne span,
1 inches
ibration
ne Stow
h a long
s stiffer
y Power

Paks were mounted on the beam.
Structures Inc. expressed complete satisfaction with the performance of the Stow screed, which struck off and vibrated the concrete quickly and true to grade.
For further information about Stow vibrating screeds, write to the Stow Mfg. Co., Dept. C&E, 443 State St., Binghamton, N. Y., or use the Request Card at page 18. Circle No. 48.

A Stow 28-foot 3 1/2-inch special vibrating screed is shown making a second pass for the deck of the bridge. Due to the length of the span, and the stiffness of the concrete, two Stow Power Paks were mounted on the beam.



Caterpillar D8 Tractor pulling a disk harrow and a D8 pulling a sheepfoot roller are among many pieces of Caterpillar-built equipment working on runway construction. The D8s feature dependable Cat Engines, operator-convenient, power-assisted controls and built-in quality for long life.



Seven No. 12 Motor Graders level fill on runways in preparation for base. Performance records show Cat-built machines are the most economical to own and operate in the long run.

in, Texas.
yd. in a
trip.

m A. F. B. construction

et wide.
s being
No. 456
six D8s,
cu. yd.
l, too—
black
m 1 to

Now a new DW20 (Series F) Tractor is available. It features the Cat Super-Turbo Engine that provides 320 HP (maximum output) . . . 28% torque rise . . . top speed of 35.8 MPH! Results: faster cycles, greater production and more profit —for you.

Get the full story on efficient, economical Caterpillar-built earthmovers from your Caterpillar Dealer. He'll demonstrate right on your job, give you expert advice. After you buy, it becomes his

personal responsibility to keep your machines at work by providing prompt service and quality Caterpillar parts if needed.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**WANTED—
THE HARD WORK**

For more facts, use Request Card at page 18 and circle No. 321

Case history

Paint pumped straight up on 22-story building

A cost-saving innovation in the painting and decorating of large buildings was employed at the Georgian Towers apartment skyscraper in Vancouver, B. C.

The painting contractor, J. Boshard & Son, Ltd., applied Bowtex, a durable, heavy stucco mastic, to the concrete exterior. An air-powered Graco Powerflo pump was used to pump this heavy material directly from the



Workmen on a scaffold apply a heavy stucco mastic to the concrete exterior of a 22-story building in Vancouver, B. C. The material was pumped through a hose, directly from the drum, by an air-powered Graco Powerflo pump.

drum 22 stories straight up. Spray guns operated steadily and uniformly, with the mastic traveling through 250 feet of hose.

The interior paint, a latex sealer, was fed to spray guns working inside through a vertical pipe-line system with a takeoff on each floor. The same Graco Powerflo pump was shifted to supply this system. Again, spray guns on every floor received steady, uniform paint supply.

The entire Graco supply setup consisted of the Powerflo pump, spray guns, line, and accessories. Principal savings were recorded in the simplicity of the system, and the great increase in speed of application.

For further information about Powerflo pumps, write to the Gray Co., Inc., Dept. C&E, 1022 Sibley St., N. E., Minneapolis 13, Minn., or use the Request Card at page 18. Circle No. 54.

Communications improved along Pennsylvania pike

The 470-mile Pennsylvania Turnpike is now connected with an expanded communications system. Two-way radios link all interchanges, maintenance buildings, Pennsylvania State Police buildings, police patrol vehicles, ambulances, authorized service trucks, tunnel portal buildings, emergency equipment, and turnpike safety department cars.

Motorists in need of emergency service will be aided by the new program, and messages about accidents will be expedited.

Case history

Tractor shovel proves big help in quarry work

A Michigan Model 275A tractor shovel is putting out a great amount of work for Oneglia & Gervasini, Inc., Torrington, Conn., contracting concern.

As part of its operations, the company runs a large traprock quarry at Woodbury, Conn., with an output averaging 1,000 tons of stone per day. Although the Model 275A's duties include stockpiling, removing riprap, and clean-up work, its most important function is loading trucks.

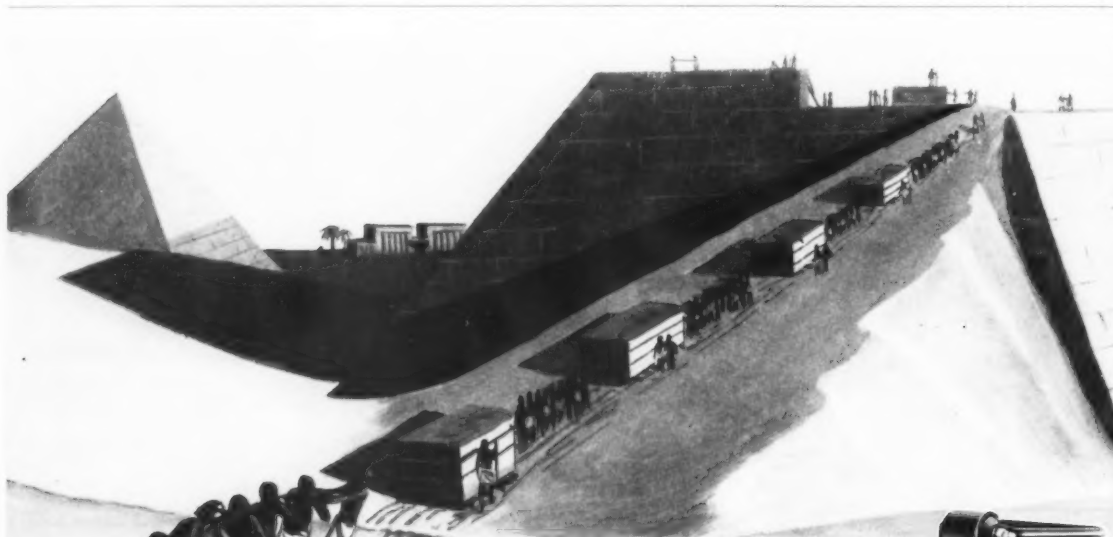
Working mostly on 10-yard ten-wheelers, the Michigan has established an average loading time of 60

In a Woodbury, Conn., traprock quarry, this Michigan Model 275A tractor-loader averages a truck a minute when loading 10-yard-capacity units. The loading of 20 to 24-yard semitrailers is said to take only a minute or so longer.

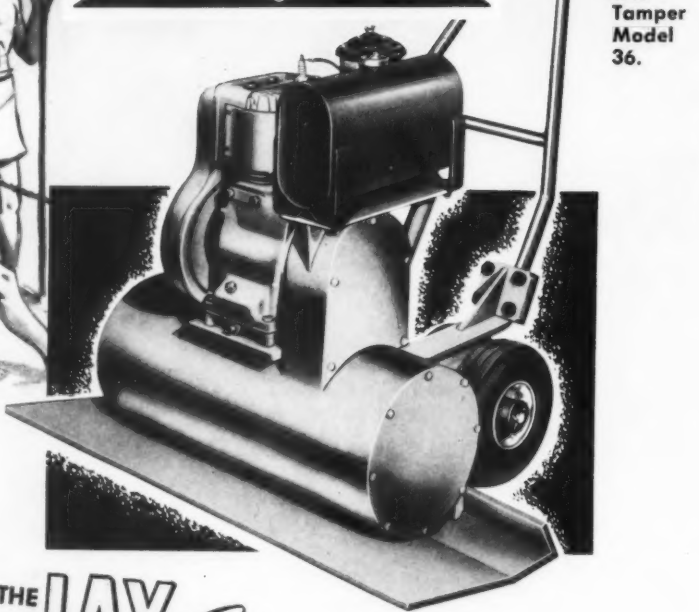


to 70 seconds—from the first pass into the stockpile to the time the truck pulls away. The loading of 20 to 24-yard semitrailers takes only a minute or so longer.

In stockpiling, the machine travels a steep, curved ramp to get to the top of the pile. Total travel distance from the crusher to the pile is only about 50 yards, but in that space the unit—



COMPACTION with PIONEERS
Quality First



JAY
Tamper
Model
36.

The Engineers at "JAY" Company are compaction pioneers in developing, testing and building high density, low cost compaction equipment, just as many thousands of years ago the Egyptians learned the basic laws of craftsmanship so have we at "JAY" Company applied the basic law of QUALITY FIRST, "JAY" Tampers have passed the test of time in millions of machine hours on jobs from Florida to Alaska, from Maine to California and in 29 foreign countries as well. Try the "JAY" Tamper and you will find as thousands of others have that the JAY WAY is the QUALITY WAY TO LOW COST, TROUBLE FREE COMPACTION.

BUY JAY TAMPERS

THE JAY Company



Please send me additional information on the JAY TAMPER

My name _____
Street _____
City _____
Zone _____ State _____

2222 S. Third St. • Columbus 7, Ohio

For more facts, use coupon, or Request Card at page 18 and circle No. 322

with a 5-ton-plus load of gravel—climbs 40 feet from ground level, with the last 20 yards pitched at a 45-degree angle. Yet the Michigan takes it day in and day out without strain.

For further information write to the Construction Machinery Division, Clark Equipment Co., Dept. C&E, P. O. Box 599, Benton Harbor, Mich., or use the Request Card at page 18. Circle No. 12.

Case history

Magnetic drill press aids in dangerous job

A difficult job, which involved drilling approximately 4,000 holes in 14-inch wide-flange steel columns at a height from the ground of 30 to 90 feet, was performed recently by Vare Bros. Construction Co., of Ardmore, Pa., with the aid of three Black & Decker 1 1/4-inch magnetic drill presses.

The job called for an extension in height of approximately fifty 132-kv transmission poles along the Pennsylvania Railroad's West Chester branch tracks, to accommodate the installation of a 3-phase electrical system. This meant that additional steel poles up to 70 feet in height had to be attached to the existing poles. The two units had to be bolted together in midair, and accurately overlapping holes had to be pre-drilled in each—80 holes in some.

Besides the obvious heavy labor involved in pushing a drill bit through 3/4-inch steel dozens of times a day, there was the danger to the operator of having to maneuver the tool while working high off the ground and close to high-tension wires.

With the Black & Decker units, the drill was fastened firmly to the steel wall of the pole, relieving the operators of the burden of supporting it.

When maneuvering from hole to hole, a safety chain supported the



unit as the operator released the magnetic power with a convenient trigger switch and directed a pointer on the magnetic base to the exact spot of the next hole to be drilled. Release of the trigger made instant magnetic contact again.

For further information about the Black & Decker magnetic drill press, write to the Black & Decker Mfg. Co., Dept. C&E, E. Pennsylvania Ave., Towson 4, Md., or use the Request Card at page 18. Circle No. 45.

CONTRACTORS AND ENGINEERS

gravel—
rel, with
t a 45-
n takes
strain,
write to
Division,
C&E,
Mich.,
page 18.

ed drill-
in 14-
ns at a
0 to 90
by Vare
rdmore,
Black &
e drill

ision in
132-kv
Penn-
Chester
ate the
ectrical
ditional
height
existing
e bolted
urately
e pre-
me.

bor in-
through
a day,
perator
l while
ad close

its, the
he steel
opera-
ing it.
hole to
ed the

e mag-
trigger
on the
of the
of the
c con-
ut the
press,
g. Co.,
Ave.,
request

INEERS



Case history

Hoist saves contractor \$1,500 on a 30-day job

In an estimate based on 30 working days, Tennessee masonry contractor T. I. Cornett reported a saving of \$1,500 directly traceable to his Tusky hoist. The job was a recently completed school addition in Haynesfield, Tenn.

The Tusky hoist is a fully automatic, hydraulic unit, with a load capacity of 1,500 pounds and a basic working height of 24 feet. The addition of extra sections permits its use at heights above 100 feet.

According to the Tennessee contractor, his Tusky has sharply reduced over-all cost figures on all of his work.

For further information write to the Tubular Structures Corp. of America, Dept. C&E, 2960 Marsh St., Los Angeles 39, Calif., or use the Request Card at page 18. Circle No. 143.

Yuba division appoints Grizzle sales director

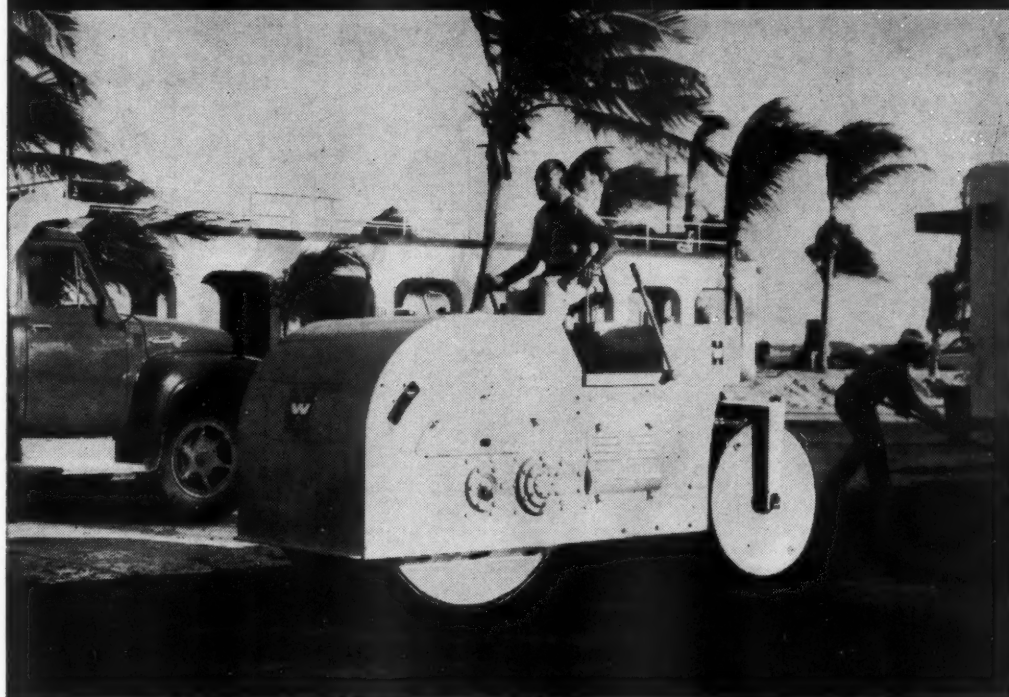
J. R. Grizzle has been appointed director of sales for the Yuba Mining Division of Yuba Consolidated Industries, Inc., San Francisco, Calif. He was in the class of 1928 at the University of California School of Mines, and has spent 10 years in the operation of oil fields and gold mines, 14 years in heavy construction, and six years in heavy-machinery sales.

During this time, Grizzle was superintendent of Liberty Hills Gold Mines, Ltd.; factory representative of Byron Jackson pumps and oil tools; superintendent of machinery installations for California Shipbuilding Corp. during World War II; and European sales manager of Cardwell Mfg. Co. Grizzle came to Yuba in 1957, and has been sales manager of Yuba Manufacturing Division.

The Yuba Mining Division will handle the engineering and sales of dredges and other mining equipment formerly made by Yuba Manufacturing Division. Yuba Manufacturing, which has been designing and building dredges and mining equipment since the turn of the century, has built a total of 175 bucket ladder dredges, large suction dredges, and floating clamshell dredges.

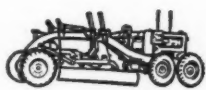
A Calendar of coming conventions appears on page 101 of this issue.

HUBER-WARCO tandem rollers



new features added to 3-5 ton tandem

Two exclusive new features have been added to the Huber-Warco 3-5 ton TANDEM ROLLER . . . a tail-shaft governor and a new disc-type brake on the transmission output shaft. Other standard features include . . . a torque converter . . . water-cooled engine . . . spur gear final drive . . . dual controls . . . and adjustable tapered roller bearings on the kingpin and on both the guide and drive roll axles. The Huber-Warco 3-5 ton TANDEM ROLLER gives big tandem performance on jobs that defy the bulkiness of a big roller. In addition to the standard unit, the 3-5 ton TANDEM is also available with a towing attachment, or with a retractable wheel attachment. In the larger size tandems, a 5-8, 8-10, 8-12 and 10-14 ton unit is available. See your Huber-Warco distributor for complete details.



MOTOR GRADERS



TANDEM ROLLERS



3-WHEEL ROLLERS



MAINTAINER

Products of HUBER-WARCO COMPANY, Marion, Ohio, U. S. A.

HUBER-WARCO COMPANY, Marion, Ohio, U.S.A.

Send me specifications on the Huber-Warco

- ☐ 3-5 ton ☐ other tandem models
☐ Maintainer ☐ Motor Graders
☐ 3-Wheel Rollers

Name _____

Title _____

Company _____

Address _____

City _____ Zone _____ State _____

6-CE

For more facts, use coupon, or Request Card at page 18 and circle No. 323





Contractor T. M. Page stands in front of his Model H-35 Beechcraft Bonanza. His firm frequently uses the single-engine 4-seater for hauling parts to a distant job, as well as for personnel transport.

Case history

Privately owned plane hauls personnel, parts

Contractor T. M. Page, of Monrovia, Calif., who has been using aircraft in his construction business since 1923, reports enthusiastically on the performance of his single-engine, 4-place Beechcraft Bonanza.

An excavating, grading and construction firm, the T. M. Page Corp. handles many railway projects. In a 200-mile railroad extension from Cotton to Yuma, Arizona, for the Southern Pacific, the company built 101 bridges. Page had three landing strips alongside the railroad, ena-

bling him to keep a close personal check on the progress of the construction project.

Page's Bonanzas are also often used for hauling needed parts. "One time while we were working on the All America Canal near Calexico, California, I even hauled a very heavy pump in our Bonanza", says Page.

For further information write to the Beech Aircraft Corp., Dept. C&E, 9709 E. Central, Wichita, Kans., or use the Request Card at page 18. Circle No. 101.



TOMORROWS BULLDOZER—TODAY!

"THE BULLDOZER OF THE FUTURE" this is the way one Road Dept. official described the Eimco 105 when he saw it operate on competitive tractor tests. Here, once again, the Eimco 105 Dozer has demonstrated superiority over conventional type tractors. In job after job, the 105 consistently proves that its simplicity of operation, smooth power flow, visibility, maneuverability and reduction in operator fatigue is the difference between marginal production and profitable production.

The work site consisted of a steep incline with rock outcropping in big slabs. The bottom ends of the rocks were deeply embedded and required maximum tractor effort to remove them.

Bulldozing down the slopes, the torque conver-

ter drive of the 105 enabled it to pick up a capacity load and move down the slope ahead of the competitive tractors with their outmoded conventional type drives.

Throughout the test — straight bulldozing, removing rocks and maneuvering — the 105 managed everything that came its way and did it with the least amount of operator effort. In direct contrast, the competitive tractor operators were constantly clutching, changing gears and braking to accomplish their tasks.

Eimco's Unidrive constant mesh transmission gives variable speed independent track control without clutching and shifting. Let us demonstrate this tractor.

THE EIMCO CORPORATION
Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N.Y. Chicago, Ill. San Francisco, Calif. El Paso, Tex. Birmingham, Ala. Duluth, Minn. Pittsburgh, Pa. Seattle, Wash.
Cleveland, Ohio London, England Gateshead, England Paris, France Milan, Italy Johannesburg, South Africa



For more facts, use Request Card at page 18 and circle No. 324

New office building for midtown Manhattan

An office building, said to be the largest in the world, will be erected next to Grand Central Terminal in New York City. To be known as Grand Central City, the new building will contain more than three million square feet of air-conditioned floor space and will rise to a height of 50 stories. Its cost is estimated at \$100 million.

The new building will occupy a 132,000-square-foot plot. The Grand Central Terminal Office Building, now standing on the site, will be demolished next year. Train service in the terminal will not be affected by the work. The general contractor, Diesel Construction Co., Inc., New York City, expects to complete the building in 1961.

More than 50,000 tons of steel will be used in the new structure's framework. Building traffic will be moved by 100 elevators and escalators.

Erwin S. Wolfson, Herbert Scheftel, Stuart Scheftel, and Alfred G. Burger are partners in the venture.

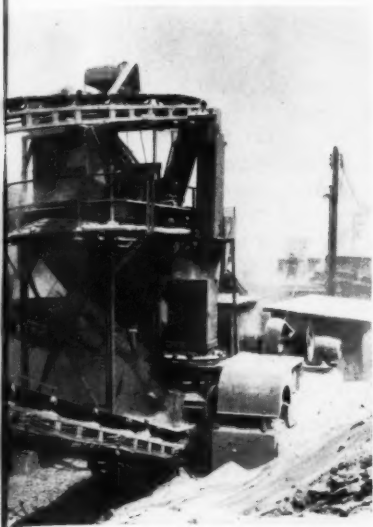
Steel work starts on Glen Canyon Bridge

A 27-ton bottom chord member, the first piece of steel for the Glen Canyon Bridge over the Colorado River in Arizona, was set last month. Preparations for this start of steelwork have taken a year. The prime contractor, the Judson-Pacific Murphy joint venture, expects to complete the job in another year.

Massey-Ferguson expands Detroit tractor plant

A new addition to the Detroit, Mich., tractor plant of Massey-Ferguson, Inc., Wichita, Kans., has been opened. The plant, covering 350,000 square feet of floor space, has a capacity of 250 tractors per shift, or one every two minutes. The enlarged plant is part of a \$3,500,000 expansion and modernization program to increase production of Massey-Ferguson's lines of industrial and farm tractor equipment.

The Work Bull industrial tractors are assembled at the expanded Detroit facility.



A compact all-steel unit, the Kue-Ken 36-7 gyratory crusher is said to be comparatively light in weight, yet to have larger shafts and bearings. Its choke-feeding design assures maximum capacity.

Case history

Big production, economy with gyratory crusher

A recently purchased Pennsylvania Model 36-7 Kue-Ken gyratory crusher reportedly is giving outstanding performance and operating economy in the production of finely crushed rock for the Faylor Lime & Stone Co. of Elizabethville, Pa.

According to LeRoy Gettel, general superintendent for the Faylor firm, "One year ago, we were in urgent need of a gyratory crusher to reduce our 4-inch stone to a 1/2-inch product. The 36-7 Kue-Ken was the answer. It has far exceeded our expectations, both in maintenance and production."

Designed for choke feeding, the Kue-Ken permits crushing of rock on rock. With choke feeding, the company states, the unit can be crowded to the limit, assuring maximum capacity. A simple size adjustment is provided.

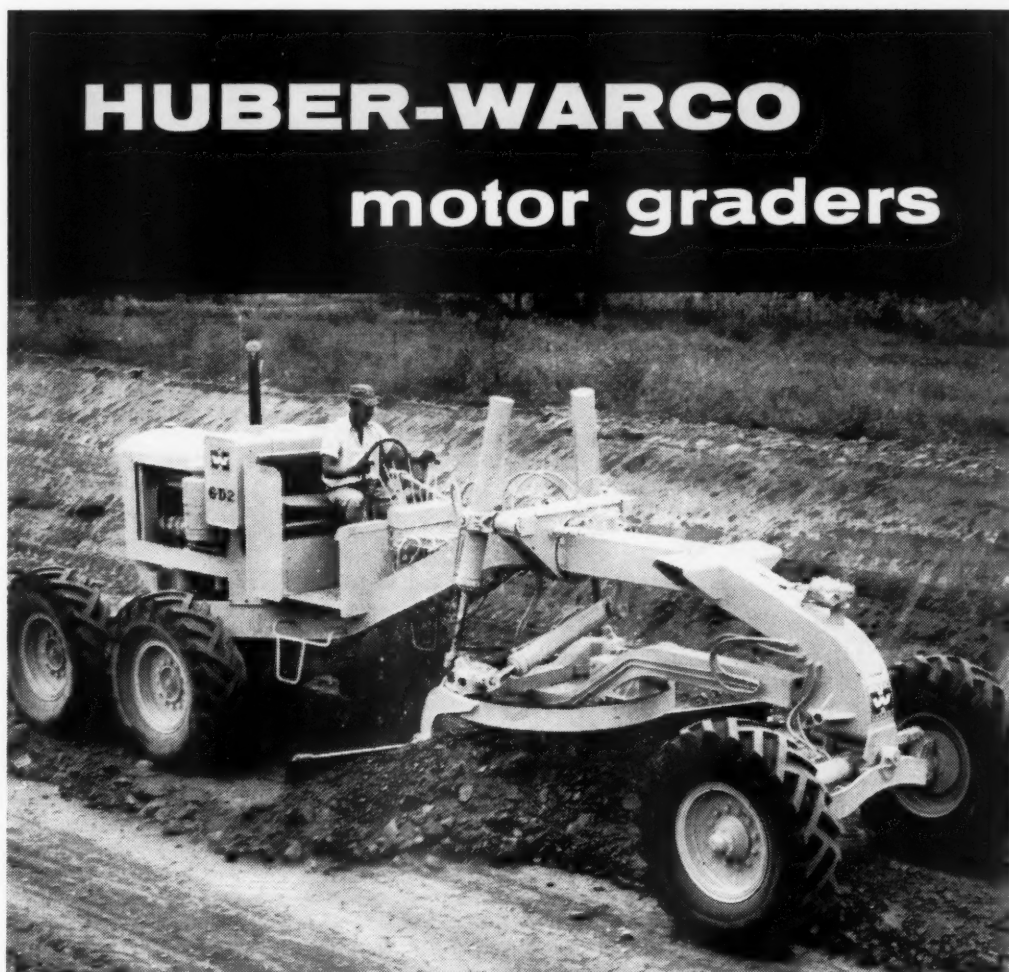
For further information about the Kue-Ken gyratory crusher, write to the Pennsylvania Crusher Division, Bath Iron Works Corp., Dept. C&E, 323 S. Matlock St., West Chester, Pa., or use the Request Card at page 18. Circle No. 113.

Duff-Norton appoints

Donald A. Anderson has been appointed district sales manager of the Duff-Norton Co., manufacturer of industrial lifting jacks and hoists, Pittsburgh, Pa. He is responsible for sales activities in the general industrial field for the firm's Jack Division and the Coffing Hoist Division in New York State and New England.

U. S. Steel appoints

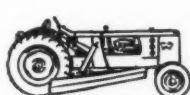
Hugh J. Phillips, Jr., has been named vice president of administration planning of U. S. Steel Corp., Pittsburgh, Pa. Phillips will assist the executive vice president of personnel services.



HUBER-WARCO motor graders

delivers more blade power

Huber-Warco MOTOR GRADERS are designed with the proper power to weight ratio for best job efficiency. The combination of a powerful diesel engine, torque converter, tail-shaft governor and power-shift transmission provide more power at the blade for the toughest grading jobs. Torque converter models range from 102 to 195 h.p. See your Huber-Warco distributor for complete details.



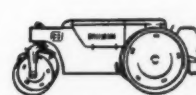
MAINTAINER



MOTOR GRADERS



TANDEM ROLLERS



3-WHEEL ROLLERS

Products of HUBER-WARCO COMPANY, Marion, Ohio, U. S. A.

HUBER-WARCO COMPANY, Marion, Ohio, U.S.A.

☐ Send specifications on Huber-Warco motor graders.

Send specifications on: ☐ Maintainer
☐ Tandem Rollers ☐ 3-Wheel Rollers

Name

Title

Company

Address

City Zone State

6-CE



For more facts, use coupon, or Request Card at page 18 and circle No. 325

Case history

Spread cuts job time by nearly two-thirds

"With 10 pieces of Allis-Chalmers equipment and a crack 13-man operating and maintenance crew, we completed our work on the Flood Control Project at the Dona Ana Arroyos (N. Mex.) Watershed in 59 days, where the original schedule had called for 180 days", asserted contractor Don Cunningham, of El Paso, Texas.

The work involved the construction of two dams and diversion dikes in the Dona Ana area, about 6 miles northeast of Las Cruces, N. Mex. To move the approximately 325,000 cubic yards of earth required of the job,



These three Allis-Chalmers units—an HD-21 crawler tractor at left, motor grader in center, and motor scraper at the right—are part of the fleet of equipment which completed the Flood Control Project at the Dona Ana Arroyos (N. Mex.) Watershed in a record 59 days.

the firm employed two Model TS-360 and two TS-260 motor scrapers, and five HD-21 crawler tractors. Two of the latter were equipped with plates for push-loading, one worked with a U-dozer, one pulled a four-gang 72-inch sheepsfoot compacter roller,

and one towed an 18-cubic-yard pull scraper. A Model AD-45 motor grader was also used.

"Generally," said Cunningham, "we averaged between 6,000 and 8,000 yards of earth moved per day, but moved as much as 10,000 yards on

our best days. With this Allis-Chalmers equipment we increased our profit on this contract by 20 per cent over what it would have been at the bid figure."

For further information write to the Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card at page 18, Circle No. 88.

Case history

Hike quarry production with two 4½-yard shovels

Houdaille Construction Materials, Inc., reports that the use of two Bucyrus-Erie Model 110-B electric shovels in its Bound Brook, N. J., quarry has enabled it to substantially increase production of traprock.

Working in a 500×1,600-foot cut against a 140 to 200-foot-high wall,



One of the brace of Bucyrus-Erie Model 110-B 4½-cubic-yard shovels is shown loading traprock into an Easton side-dump trailer pulled by an Autocar tractor. These electrically powered shovels bear the brunt of loading the 7,000 to 9,000 tons of stone daily.

these 4½-cubic-yard machines, together with two 2½-yard Bucyrus-Erie 75-B shovels keep a 48×60-inch Traylor primary jaw crusher operating at peak capacity.

The 75-B's, dating back to the early 1930's, have been in continuous operation at the quarry. Both have been rebuilt in the last four years.

Power for all four machines is taken from a private line rented by the company from the local utility.

For further information write to the Bucyrus-Erie Co., Dept. C&E, The Doerman Bldg., S. W. Corner Tenth Ave. and Michigan Ave., S. Milwaukee, Wis., or use the Request Card at page 18, Circle No. 166.

Yale & Towne elects two vice presidents

Elmer F. Franz and John A. Baldinger have been elected vice presidents of the Yale & Towne Mfg. Co., New York, N. Y. Franz was also re-elected treasurer, a post he has held for the past nine years.

Baldinger will continue to serve in Philadelphia, Pa., as general manager of the firm's Materials Handling Division, which produces the Yale lines of industrial lift trucks and hoists.

In April, 87,217 vehicles traveled over Arizona's highways; this is a 2.7 per cent increase over April, 1957.

CLEMENT HYDRAULIC-LIFT TANDEM TRAILERS

LOAD MORE AT THE SHOVEL . . .
HAUL MORE OVER THE HIGHWAY . . . LEGALLY

You get a big bonus when you spot a Clement Dump trailer under a shovel. They load extra yards—legally—compared to conventional dump units. Clement's unique caterpillar-dump-action eliminates heavy rigid frames—puts dead weight into bonus payload.

There is an added bonus in every day's operation, for Clements spot easily and have fast hydraulic dumping action to speed-up round trips. Work records prove Clements haul more with less maintenance and operating cost than any other dump equipment.

Designed by Clement, inventor of the original cable-lift dump trailer. Field proved on hardest quarry and construction projects.

Boost your earning power per dump unit . . . contact your nearest Clement distributor or write direct . . . today.

CLEMENT-BRASWELL, INC.
Shreveport, Louisiana
PLANT: Minden, Louisiana

Limited number of Clement distributorships open to qualified heavy equipment dealers.

DISTRIBUTORS:

BECKMAN TRAILER SALES, Fort Worth, Texas • H. C. BLACKWELL, Jr., Adamsville, Alabama • TIMPTE BROS., INC., Denver Colorado • HAWKEYE TRUCK EQUIPMENT COMPANY, Des Moines, Iowa • HERD EQUIPMENT COMPANY, Oklahoma City, Oklahoma • HIGHWAY TRAILER SALES, INC., Kansas City, Mis-

souri • I F NELIS ASSOCIATES, Houston, Texas • ROAD MACHINERY & SUPPLIES, Duluth, Minnesota • ROAD MACHINERY & SUPPLIES, S.E. Minneapolis, Minnesota • SCHETKY EQUIPMENT CORP., Portland, Oregon • SHIPLEY TRAILER & EQUIPMENT COMPANY, Fort Smith, Arkansas • STRANGE TRUCK & EQUIP-

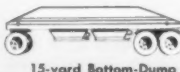
MENT, INC., West Sacramento, California • SWANSTON EQUIPMENT COMPANY, Fargo, North Dakota • TRANSPORT EQUIPMENT CENTER, Salt Lake City, Utah • WESTERN TRAILER COMPANY, Lubbock, Texas • WISCONSIN HIGHWAY TRAILER CORP., Green Bay, Wisconsin • ARCHER TRAILER & TRUCK SALES, Chicago, Illinois.



15-yard Hydraulic-Lift



10-yard Hydraulic-Lift



15-yard Bottom-Dump



10-yard Bottom-Dump



8-10-yard Dual-Trailer

For more facts, use Request Card at page 18 and circle No. 326

Avoid legal pitfalls

Income tax accounting was proved erroneous

THE PROBLEM: The contract price on a federal building was \$817,225. The contracting firm completed the job and made out its federal income tax return on an accrual completed-contract basis, including \$25,700 as part of its accrued gross income for that year. This was the firm's own estimate on how much was due from the government as damages for delaying the work. Eight years later, the Court of Claims awarded the firm only \$10,415.66 on the disputed claim. The firm in its return for that year claimed as a bad-debt deduction \$15,284.34, the difference between the firm's damage claim and the amount awarded. Was that proper income tax accounting?

THE ANSWER: No. (Irwin v. Commissioner of Internal Revenue, 238 Fed. 2d 874, decided by the United States Court of Appeals, Third Circuit.)

The disputed damage claim was a contingent and uncertain one and so was improperly included in the first return. The year in which work is done does not show accrual of right under a contingent claim. Under the accrual accounting method, items of income are deemed to have accrued "when the right to receive the income becomes sufficiently certain and definite", although the money is not actually received. The decision seems to mean that the firm should have waited until the amount of the damage claim was finally adjudicated and then included the amount awarded as having accrued in that year. The firm suffered no "bad-debt" loss.

Contractor "stole" cement

THE PROBLEM: Defendant was employed to construct one building and to repair others for the same owner. The contractor ordered 200 sacks of cement, needed in the work, on the credit of the owner. The cement was stored on the work sites. Later, the contractor moved 65 sacks of cement to his own premises, and used it in building a tool house. He was convicted of stealing. Was he entitled to release on the ground that he embezzled, not stole, the cement?

THE ANSWER: No. (State of Kansas v. Bean, 317 Pac. 2d 480, decided by the Kansas Supreme Court.)

The defendant lawyer's argument was based upon a theory that the defendant was in "possession" of the cement, and therefore could not steal it. The court decided that the material must be regarded as having been in the possession of the owner, and that the defendant was just as much a thief as anyone else stealing the cement. The point involves a rather thin distinction between a contractor's "custody" of materials owned by the owner and the owner's legal "possession" of the same.

Fire prevented completion of reconstruction job

THE PROBLEM: A contractor agreed to remodel a building for a lump sum and had almost completed the job when fire destroyed or damaged much of the work, evidently without fault on his part. Was the contractor entitled to collect the full contract price because it was not his fault that he could not complete the job?

THE ANSWER: No. (Kaufman v. Gray, 135 Atl. 2d 455, decided by the Municipal Court of Appeals, District of Columbia.)

The court said that the case was governed by the general rule of law that where a contract calls for repairs on an existing structure and the work is not substantially completed when

damaged or destroyed by fire, the contractor's compensation right is limited to the reasonable value of the work done before the fire.

Contractor's bond did not cover loans

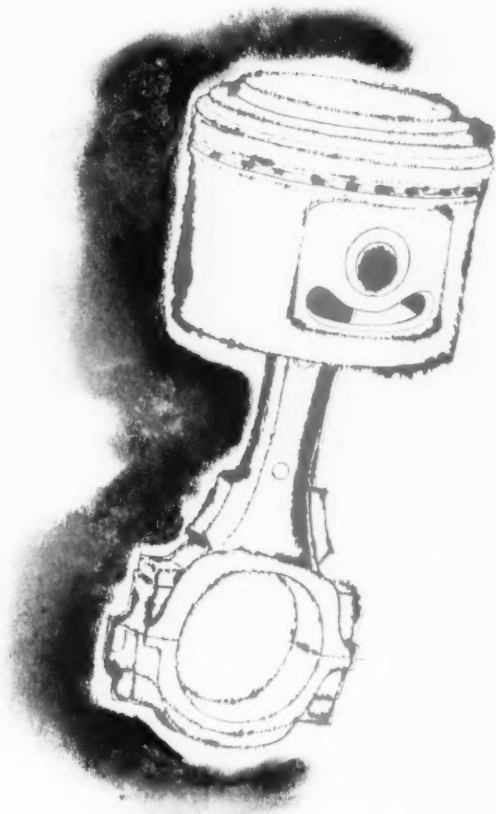
THE PROBLEM: A state highway contractor's bond to the state secured performance of the contract and payment of "all bills for labor, materials, equipment, and for all other things contracted for or used in connection with the work." Did the bond protect a trust company that lent money to the contractor to pay wages?

THE ANSWER: No. (Newport Trust Co. v. Susi, 134 Atl. 2d 543, decided by the Maine Supreme Judicial Court.)

The decision was influenced by these facts: the bonding company did not know that a loan was being made; and the workmen did not know that they were being paid out of the proceeds of the loan, and therefore did not assign to the bank their rights under the bond. Neither the contract nor the bond mentioned loans to the contractor.

Edited by A. L. H. STREET Attorney-at-Law

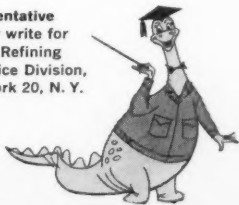
These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.



Pistons... Oil... and How to Save Money

The longer your pistons work before need of ring replacement—the less your cost of operation. Sinclair Tenol® Oils have the reputation for giving longer service to cylinders, rings and other vital parts. Refill with Tenol now. Next time management asks how you've cut costs, tell them you've switched to Sinclair—and show them the results.

Call your Sinclair Representative for further information or write for free literature to Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. There's no obligation.



SINCLAIR Tenol® Oils

For more facts, use Request Card at page 18 and circle No. 327

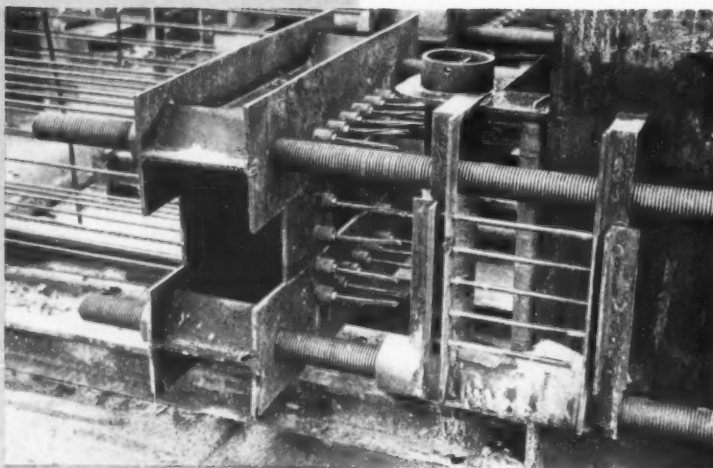


Strands from a 20-reel rack lead to the live end of one casting bed, where 20-inch concrete piles are being poured. Each row of the bed has two anchor columns embedded in the concrete anchorage at each end.



Two 535-foot-long casting beds are turning out prestressed components to supply firm's own construction projects

Strands pass through a spacer-bar attachment and vertical roller welded to each pair of anchor columns at the live end of the bed. The vertical roller aligns the strands for threading through the strand plate. Europa strand vises fasten them to the plate.



Contractor applica tor

Strands passed through the strand plate at the jacking end are threaded through bulkheads making up the various lengths of piling or girders. The strands are attached to a pulling plate that rides a dolly to the dead end of the bed.



An American gasoline-driven hoist, mounted on skids, pulls the dolly toward the dead end of the casting bed. The truck-crane is stripping slice forms and positioning them in another row.



by **ANTHONY N. MAVROUDIS**
field editor

When Duval Engineering & Contracting Co., Jacksonville, Fla., decided to continue building bridges, it also decided to manufacture its own prestressed piles and girders. Duval, one of Florida's largest contracting organizations, realized that more and more of the structures being built in the state were of prestressed construction. It is an established fact that Florida has been pioneering the use and development of prestressed bridge components, and many times the state specifies their use on contracts.

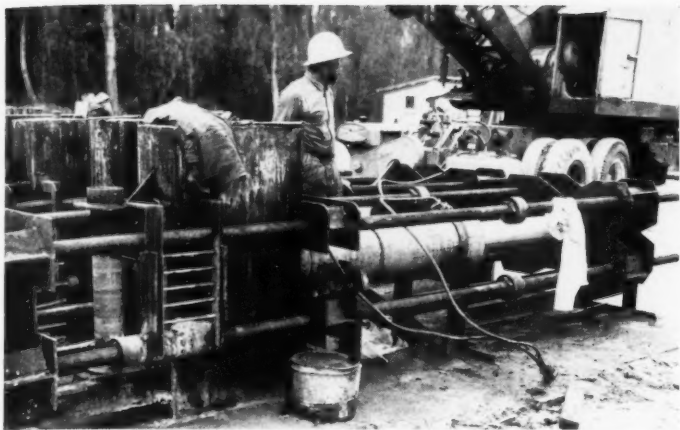
Since a large percentage of the contract cost involves the furnishing of prestressed components, it made good sense to Duval—and no one will deny this—to produce rather than purchase these contract items.

Extra-long beds

For a start, Duval decided on two universal casting beds, identical in construction, one to be used for piling and the other for beams. This provides ample production facilities, plus flexibility, since both beds can be used for either type of prestressed member.

In determining the effective working length of the beds, the contractor had to take into account the proposed elongation of the prestressing strands. By using Rodgers 300-ton hydraulic jacks, instead of the 200-ton jacks widely used throughout the

CONTRACTORS AND ENGINEERS



The Rodgers 300-ton hydraulic jack places a force of 18,900 pounds per strand on all strands, simultaneously. The jack pushes the push block, which pulls the strand plate. Both ride a double track.



After the strands have been stressed, a truck-crane positions Watco side-wall piling forms for a row of 20-inch piling. Forms are connected to bottom-form pallets by Richmond Snap-Tys.

pliehe "do-it-yourself" idea trestressed members

OU DIS
editor

& Con-
Pla., de-
ridges, it
its own
. Duval,
tracting
ore and
built in
ed con-
faced fact
ring the
trestressed
ay times
on con-

the con-
shing of
ade good
ill deny
an pur-

on two
tical in
or piling
his pro-
ies, plus
can be
stressed

e work-
ntractor
he pro-
tressing
300-ton
he 200-
out the

GINEERS

country, Duval found that a much longer casting bed could be built. A 300-ton jack has a maximum ram elongation of 48 inches which, of course, fixes the maximum allowable strand elongation.

For safety's sake, and to eliminate any strain on the jacks, Duval used a maximum strand elongation of 40 inches to calculate the maximum allowable length of strand. This, in turn, determined the effective working length of the casting beds. Both of Duval's casting beds have effective lengths of 535 feet, making them two of the longest units in the country.

Each bed measures 22 feet in width and is capable of handling five rows of girder or pile pours. The one concrete anchorage on each end of the bed is 26 feet long, 22 feet wide, and 6 feet thick, and it required 130 cubic yards of concrete. These anchorages were not built according to conventional design, which calls for mass concrete pours of many hundreds of cubic yards.

Anchorage

The anchorages are supported, or fastened to the ground, by forty-two 10 to 14-inch-diameter timber piles and ten 10-inch steel H-piles, all of them from 35 to 40 feet long. The piles, driven to rock, are designed to resist the 2-million-pound tensile force developed by the bed. In most conventional casting bed setups, the

weight of the concrete anchorages is designed to overcome the tremendous overturning forces developed during stressing operations.

The timber pilings were driven in seven rows of six piles for each anchorage, with three rows battered toward the bed and four rows battered toward the rear. All are on a 1 to 3 batter. The first three rows were driven toward the bed to act as compression piles, since they would be placed in compression by the overturning force on the anchorage. The rear four rows, battered away from the bed, are tension piles relying on skin friction to resist the overturning forces. (See illustration, page 38.)

Between the rows of compression and tension piles, Duval drove the ten steel H-piles. These were driven plumb to permit ten 27-inch-wide flange anchor columns to be welded to them, tying the anchor columns to the pile foundation.

Before the concrete anchorages were poured, Duval arranged to obtain a good bond between the piles and the concrete anchorage. Two holes, perpendicular to each other and spaced 24 inches apart, were drilled through the four rows of tension piles. Duval then passed No. 8 reinforcing bars through the holes to provide for the bond.

The 27-inch anchor columns had 3-foot-long notches cut out of the

(Continued on next page)



Ready-mix concrete is chuted to the Watco forms and consolidated by a Homelite electric vibrator that has a 1½-inch head so that it can fit between the loaded strands.



A Manitowoc 3900 crane stockpiles members between the casting beds. When units are to be shipped by barge, the crane loads them to a railroad dolly which runs to the unloading derrick, background, on the Trout River.



◀ Piles in various stages of completion. Forms placed for the second row from left have spacer bars to hold them in position.



Transit mixers mounted on Mack trucks are being used to deliver concrete for the 20-inch piling. ▶

(Continued from preceding page)

web so that they could be accurately positioned over, and then connected to, the driven H-piles. The flanges of the I-beam were tapered so that they could be spliced directly to the flanges of the H-pile. Careful checking was required during the positioning of the I-beams because any eccentricity would have resulted in improper stressing of the strands. Since the required accuracy in alignment could not be obtained during pile-driving operations, Duval developed the splice to overcome this design criterion.

No. 8 stirrup bars were placed around the anchor columns on 6-inch vertical centers, to prevent any shearing forces from cracking the concrete anchorage. The ten anchor columns, a pair for each of the five casting-bed rows, are about ten feet long and extend 4 feet above the concrete anchorages. The protruding portions of the anchor columns were later boxed in; steel plates were welded between the flanges and then filled with concrete. This gives the columns added rigidity.

Casting-bed slab

A concrete casting bed, designed to support only the dead weight of the concrete pours, consists of a slab 7 inches thick at the center and 9 inches thick along the edges. Expansion joints, spaced on 50-foot



A pair of timbers bolted at each corner of the steel bulkhead maintains the proper spacing between them. Bulkheads are made of steel plates, with angles welded around their perimeters so that the required chamfer is formed at the ends of piles. Note openings in the bottom-form pallets so that side wall forms can be connected.



Hauling through hub-deep mud or spreading sub-base to specs...

Paywagon® fleet delivers 90% availability working every shift on Illinois

A fleet of six International 75 Paywagons is making performance history—spearheading 5.4 miles of Illinois Toll Road construction, and relocating four miles of creek channel for CKG Associates,* on ex-marshland skirting Western Springs, Illinois.

Taking the mauling abuse of highballing 15-yard loads over rutted haul roads, chuck-holes, and grades, the Paywagon fleet is setting an amazing 90% "availability" record—through month after rugged month of 10-hour-shift days!

"Paywagon availability has been over 90% on this job," reports William P. Cagney, Jr., president, Contracting Material Co.

Battling over muck and gumbo fill that would mire

Four Paywagons of the six-unit fleet keep busy hauling from creek channel excavation. "Not a single Paywagon unit has lost a whole working shift all winter for downtime reasons," states Grading Supt. Ted M. Sliger.

low-slung rigs to a belly-dragging stall, the Paywagons give competitive bottom-dumps on the job a real lesson in traction, maneuverability, and clearance!

In addition, CKG Associates are using the cost-cutting controlled dumping Paywagon feature—another big International exclusive—to lay sub-base wholesale with dump-truck accuracy!

Try 75 Paywagon soft-fill beating traction and clearance—compare its load-speeding turbo-charged diesel hp! Measure advantages like planetary final drives. See how Hydro-Steer, selective and dual-wheel braking add operating ease and safety. Try controlled dumping accuracy. See your International Construction Equipment distributor for a demonstration.

*CKG Associates is composed of Contracting Material Co., Kenny Construction Co., and Louis Garavaglia, I. C. "Red" Harbour is Project Manager on the CKG job.



**International
Construction
Equipment**

International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.





◀ The 50-ton company-built stiff-leg derrick at the southern edge of the site takes piles from a railroad dolly. The dolly is powered by a Whitcomb gasoline locomotive. The derrick, powered by a Clyde steam engine, background, is equipped with a 75-foot boom.

This 535-foot casting bed will be used for the casting and prestressing of girder sections. The Watco girder side forms, supplied by Plant City Steel Corp., Plant City, Fla., are strung out along one of the five rows. ▶



Here comes a 75 Paywagon with a 15 cu yd load hauling in typical gumbo conditions. "These 2-axle units will pull through the soft fills much better than any others we've used," states William P. Cagney, Jr., President, Contracting Material Co.

ecs ...
0% availability
moistoll road!

Paywagons
b a real
grance!
cost-cut-
another
wholesale
ion and
o-charged
ary final
ual-wheel
controlled
Construc-
tion.

al
nn

Chicago 1, Ill.
Self-Propelled
ulers ... Diesel
ment.



Paywagon speed and "off-road" mobility enable the contractor to keep ahead of schedule on sub-base spreading with only two "75" units! The toll road will accommodate six 12' traffic lanes. The contract involves building 16 traffic interchange structures!



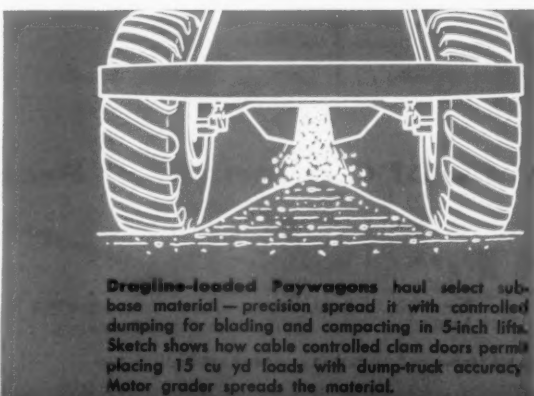
How Paywagon controlled dumping lays sub-base to engineer's specs!

Paywagon design provides simple, one-cable door control. An ingenious cable sheave arrangement, plus geared-together clam-action door design gives a simple, trouble-free Paywagon dumping mechanism.

This positive door-opening control permits the operator to windrow material accurately, or spot his full load exactly where desired.

High Paywagon clearance of 41 inches gives ample room to straddle dumped loads. The clam doors open out and up—leaving no dangling projections to foul up in windrows or fills.

Only the International Paywagon gives you this positive controlled dumping.



Dragline-loaded Paywagons haul select sub-base material—precision spread it with controlled dumping for blading and compacting in 5-inch lifts. Sketch shows how cable controlled clam doors permit placing 15 cu yd loads with dump-truck accuracy. Motor grader spreads the material.

centers along the 535-foot-long slab, were formed with 1/2-inch-thick pre-molded fillers.

All structural connections between the slab and the two anchorages were eliminated during pouring, to prevent compressive forces on the anchorages from being transmitted to the slab. This was done by placing tar paper over the surface of the anchorages where the ends of the slab rest. An expansion joint was also formed between the ends of the slabs and the anchorages.

Slab sections immediately adjacent to the anchorages are reinforced with No. 6 reinforcing bars to help resist any possible compressive force transmitted from the anchorages. The remaining sections are reinforced with welded-wire mesh placed at mid-depth.

The two parallel beds were positioned 138 feet apart, measured edge to edge, to provide ample room for a railroad track between them. The track is 69 feet from either bed and runs along their entire length.

Duval is using a Whitcomb gasoline locomotive to power a dolly from the beds to a stockpile and unloading point. The dolly consists of two 90,000-pound railroad trucks. A Manitowoc 3900 crawler crane is used to load completed girders or piles onto the dolly.

The 138-foot strip between the beds also serves another useful purpose as a temporary storage area for completed prestressed members. The Manitowoc can either make a temporary stockpile of the completed units or load them directly onto the dolly.

Duval erected a strand rack at the live or jacking end of the casting beds and positioned it exactly midway between them. From this one set-up, the prestressing strands can be fed to either bed. At present, the strand rack has a storage capacity of 20 reels, but the company plans to increase this number to 28, which will be used simultaneously for larger members.

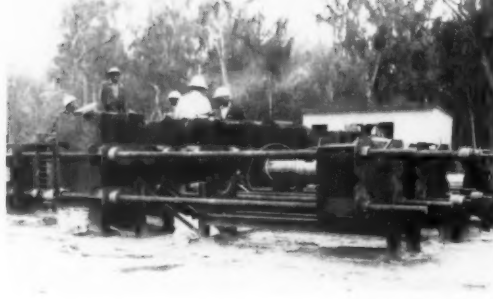
Planning pays off

After the casting beds were completed, many operating techniques were tried and tested. Time studies were made on every manufacturing step to determine the most efficient methods to be incorporated as part of the plant's operating procedure. Bridge superintendent P. T. Bennett and plant superintendent Jack Clifton visited many prestressing plants throughout the Southeast to study

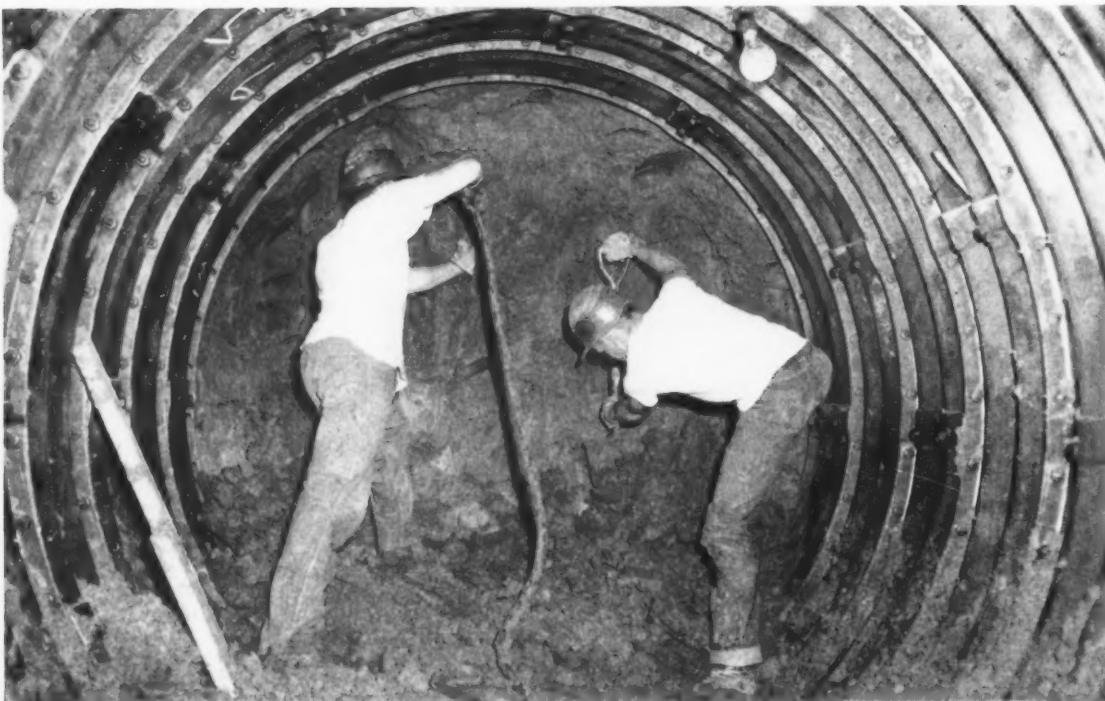
—For more facts, circle No. 328



A 20-reel strand rack at the jacking end of the casting beds holds Roebling and American Steel & Wire 7/16-inch-diameter strands, which are fed to the beds through vertical roller assemblies in front of each row of reels.



Five jacking positions are provided at the live end of the bed. The push block to the rear of the anchor columns in each row is connected to the strand plate by four 2 1/2-inch-diameter tie-bars. The jack is supported by cradles between the push block and anchor columns.



These Armco men are installing a tunnel of Armco Liner Plates through a railroad fill on a subcontract from a general contractor.

On a fixed-price, subcontract basis You can get Armco Products Installed

Armco Construction Service specializes in the installation of Armco Drainage and Construction Products on a subcontract basis. This is offered as a service to the general contractor who gains the advantages of known cost, and speed of installation on specialized jobs. In addition, your own equipment and personnel are free for other work.

Subcontract work handled by Armco Construction Service includes jobs like tunneling with Armco Liner Plates; boring and jacking of conduit, sewers and other drainage structures; assembly and installation of Armco Corrugated Metal Pipe and larger MULTI-PLATE® Structures; erection of Armco Steel Buildings, Armco Retaining Walls and Armco FLEX-BEAM® Guardrail.

This service has been used by contractors for the past 28 years. Both equipment and skilled crews are available to handle your specialized jobs quickly and economically. Send coupon for free booklet describing this service. Armco Drainage & Metal Products, Inc., 5508 Curtis

Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

SEND COUPON FOR FREE BOOKLET

Armco Drainage & Metal Products, Inc.

5508 Curtis Street, Middletown, Ohio

Please send my copy of the free booklet explaining the Armco Construction Service.

NAME _____ TITLE _____

ORGANIZATION _____

STREET _____

CITY _____ ZONE _____ STATE _____

The Armco Family of Construction Products



Tunnel Liner Plates



Retaining Walls



Steel Buildings



Corrugated Metal Sewer Pipe and other Drainage Structures



Water Supply Pipe... and many others



For more facts, use coupon, or Request Card at page 18 and circle No. 329

(Continued from preceding page)

the various techniques in use. Many were refined and tested. The time studies also determined which techniques were best suited to the crew. All of the plant crew members, numbering about 25, were green and had to be taught every step. But all this planning, though time-consuming, paid off, because the men became familiar with the various prestressing work methods.

Positioning strands

In a typical operation, strands are fed out from the rack through vertical rollers and fastened to a pulling block. Another vertical roller, at each pair of anchor columns at the live end, permits the strands to be properly aligned with the bed. The strands are then passed through the empty casings of the Europa strand vises, the live-end pulling plate, and threaded through the required number of bulkheads and spirals before being attached to the pulling block. Europa strand vises are used to fasten the strands to the pulling block.

Threading the 7/16-inch-diameter Roebling or American Steel & Wire prestressing strands through the bulkheads has been simplified, since the bulkheads are self-supporting steel units. They consist of a 1/4-inch-thick steel plate framed with 2x2x1/4-inch angles welded around the perimeter, and they are supported by means of the angles. Another good feature of these bulkheads is that they automatically form the chamfers that are required at the ends of each pile. Duval fabricated these units after making time studies on various types of bulkhead installations.

After all required strands are attached to the pulling block, it is fastened to a 4-wheel dolly that straddles the bottom steel form pallets. An American gasoline-driven hoist, located at the dead end of the casting bed, then pulls the dolly the entire length of the bed. The bottom pallet, bolted to the concrete bed by Page cinch anchors, maintains the course of the dolly throughout the 535-foot-long trip.

Bulkheads positioned

As the dolly is pulled along the bed, stirrup bars draped across the strands in front of each bulkhead are also carried along. When the desired location of a bulkhead is reached, the stirrup is locked to a bar which is passed through openings in the bottom form. This causes the inverted-U stirrup to stop and, in turn, it automatically stops the bulkhead at the proper location. This procedure, another time-saver, permits Duval to position the bulkheads before the strand-pulling operation is completed.

The dolly is removed, once the pulling block reaches the dead end of the casting bed. After the dolly slides down an incline, causing the pulling block to come to rest on a double track, the pulling block is tied back to the two dead-end anchor columns. The tie is made by four 2 1/2-inch-

CONTRACTORS AND ENGINEERS

diameter tie-bars, each having a strength of 160,000 psi.

The strands are finally connected to the live-end pulling plate by placing the strand-wise jaws in the Europa grips. Four 2½-inch-diameter bars connect the strand plate to the jacking block on the opposite side of the anchor columns. Before actual stressing operations can begin, each strand is pre-loaded individually by a Dillon dynamometer at the dead end of the bed. A load of 1,000 pounds is applied to each strand to remove slack and kinks, and to obtain a known working datum to assure a uniform loading of strands during jacking operations.

After being pre-loaded, the strands are cut with a torch at the live end. This releases the strands from the reels so that actual stressing operations can begin.

Jacks apply stress

To begin the stressing, Duval positions the Rodgers 300-ton hydraulic jack on welded cradles between the push block and the anchor columns. This positioning is generally handled by a truck-crane. The simultaneous stressing of all the strands is accomplished as the jack exerts a force against the push block which, through the four tie bars, pulls the strand plate. Both the push block and the strand plate ride on a double track.

The hydraulic jack is powered by a portable Rodgers pump, which can be easily moved to other casting beds. Duval plans to erect an overhead frame to span the jacking positions and facilitate the movement of the jack from row to row.

A total load of 18,900 pounds placed on each strand results in an elongation of about 39½ inches. With the strands fully stressed, workmen spread and tie the previously threaded spiral wire to the pretensioning strands between bulkheads.

The steel side forms, whether they be for girders or piles, are then installed along the row. All the Watco steel form sections were supplied and fabricated by Plant City Steel Corp., Plant City, Fla. These side-wall sections, easily connected to the bottom-form pallet by Richmond Snap-Tys, are held apart at the top by spacer bars.

Duval has enough Watco side-wall forms to pour two complete 535-foot rows of piling, and enough girder forms for two rows of Type III girders and one row of Type II girders. There are enough bottom forms at the plant for five complete rows of 20-inch piling and one row of 24-inch piling. Enough pallets are on hand for three rows of Type III and two rows of Type II girders.

Form oil is sprayed on the forms as they are being stripped from one row and positioned for another. This allows the bond between the concrete and forms to be easily broken. At present, Duval is using ready-mix concrete for all pours, but in the near future the firm plans to set up a concrete batch plant to supply all the mix required.

The ready-mix truck chutes are used to pour the 1½-inch slump concrete into the forms. Consolidation during pouring is handled by a Homelite electric vibrator having a 1½-inch-diameter head. This permits the vibrator to get down between the pretensioned strands, and assures uniformity of the pour. Hand-troweling is all that is required for the top exposed surface of the piling or girder pours.

Hunt Clear Cure curing compound is sprayed on the concrete surface

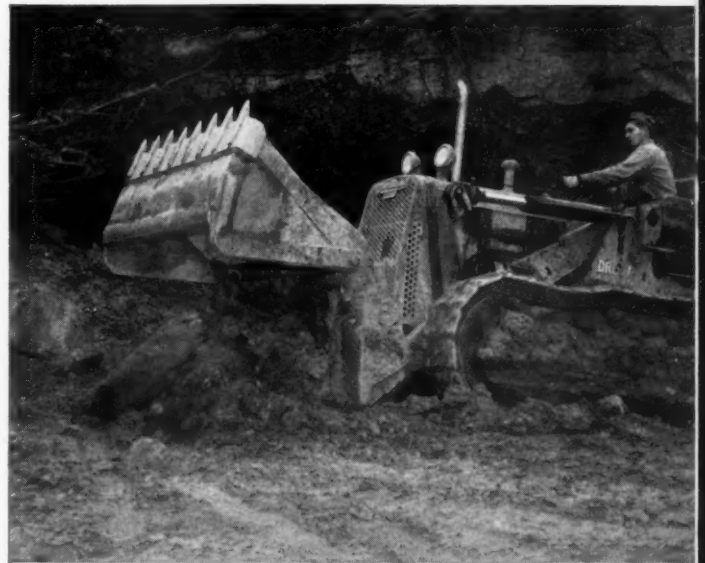
(Continued on next page)

After the pour has been tested and the strands detensioned by reversing the stressing process, strands between the bulkheads are cut by a torch. This is usually done after 72 hours, when concrete reaches a strength of 4,000 pounds per square inch.



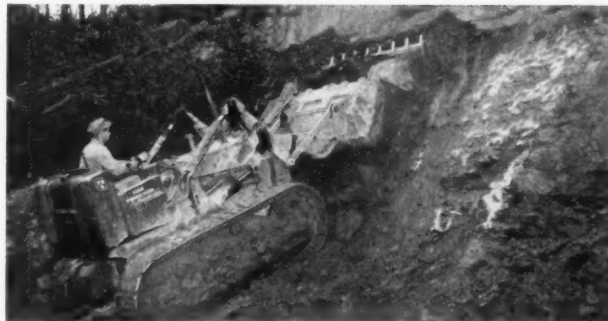
Replaces power shovel with 4-In-1

... gets versatility unlimited!



Digging, 'doxing, clearing, loading—this International Drott TD-9 4-In-1 replaces the limited-duty performance of a ¾ cu. yd. power shovel. Tony Pacifico Company, Charleston, W. Va., practically builds a 100-ton-per-hour stone-quarrying

operation around 4-In-1 versatility. Above using bulldozer action, the 4-In-1 is removing overburden from a 60-foot-thick rock stratum. Owner formerly had to hire a dozer in addition to the power shovel to clear and strip!



Using a back-drag motion of the clam lip, with high-reaching 4-In-1 clamshell action, the Pacificos do a fast, low-cost job of bank-sloping—to forestall earth slides into the quarry. The exclusive, big-capacity clamshell also gives speedy "stand-and-fill" action of loose materials.



Pushing over a hardwood sapling, the Pacifico 4-In-1 is used for land-clearing ahead of stripping quarry overburden. For uprooting larger trees, a grubber blade can replace the 4-In-1 bucket to apply the tremendous lifting power of exclusive Drott pry-over shoe break-out action!

Sticky clay dumps clean—quits gumming the works and slowing overburden removal when the Pacificos use 4-In-1 clamshell bottom dumping. Opening the clam pulls sticky materials from bucket surfaces—gravity pull does the rest, to give the 4-In-1 positive self clean-out!

Prove 4-In-1 four-machine versatility unlimited! Move the machine-selector lever—try the built-in clamshell, "carry-type" scraper, bulldozer and Skid-Shovel actions. Compare exclusive pry-over shoe break-out action for digging hard materials other rigs can't budge! See how exclusive Hydro-Spring swallows shock, protects performance. Ask your International Drott Distributor for 4-In-1 demonstration.

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin



INTERNATIONAL®
DROTT®

International Harvester Company
180 North Michigan Ave., Chicago 1, Illinois

Gentlemen:

Please send 4-In-1 catalog literature checked:

☐ 1-yd. TD-6 ☐ 1½-yd. TD-9 ☐ 2¼-yd. TD-14 ☐ 3-yd. TD-18
(CR-640-H) (CR-627-H) (CR-635-H) (CR-632-H)

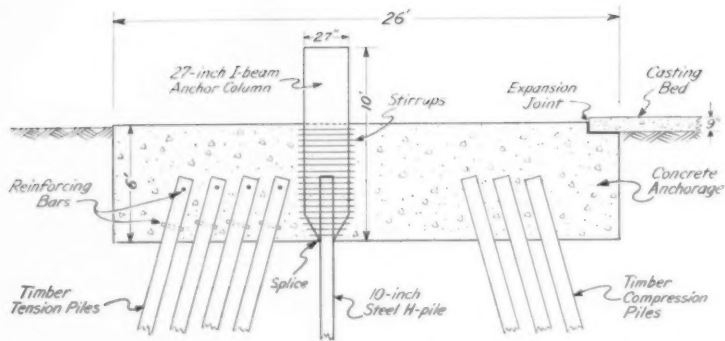
Name _____

Street or R.F.D. _____



Send for free catalog

For more facts, use coupon or circle No. 330—



A cross-section of the casting bed anchorages.

(Continued from preceding page)

within a few hours to hasten the stripping time. Forms are stripped the following day.

After a few months of operation, Duval has been able to set up and maintain this production schedule:

7 to 9 a.m.—strip and reset the Watco side forms on new row that has strands already stressed.

9 a.m. to 12 noon—pour concrete in newly set forms.

During the afternoon, strands are threaded and pulled, pre-loaded, and pretensioned in another row for the following day's pour.

This simple schedule permits flexibility in operation.

Strands are cut between the bulkheads after 72 hours, and only when the concrete test cylinder shows a minimum breaking strength of 4,000 psi. Cutting is done by a torch, only after the row has been detensioned.

Detensioning is accomplished by replacing the hydraulic jack at the live end, after the concrete has reached a 4,000-pound strength, and reversing the prestressing operation to release the live load.

Handling components

Duval's yard is equipped to ship prestressed components by rail, water, or highway. Completed prestressed members are picked up by the Manitowoc 3900 crane and brought to a temporary stockpile adjacent to the beds, or directly to the railroad dolly. The tracks extend beyond the dead end of the casting beds to a 50-ton company-built stiffleg derrick located at the southern edge of the plant site. Powered by a Clyde steam engine, the derrick uses its 75-foot boom to stockpile members or load them directly to a barge in the Trout River. A plant-site dock makes this means of shipment very convenient. Only 1½ miles of water separate the site and the Inland Waterway, which offers easy access by water to most of the eastern coast.

A railroad spur has been built along the northern end of the plant site, to service the proposed batch plant and to handle rail shipments.

Shipping by truck has also been made convenient. The plant site is only two miles from U. S. 17, the major north-south artery feeding Jacksonville.

Just at the moment, Duval is keeping the plant busy turning out prestressed components for company projects. But the operation does not end here. This is also a springboard to the company's work as a commercial supplier of prestressed units, and the future looks bright indeed.

THE END

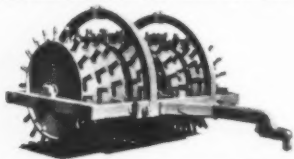
Westinghouse Air Brake elects vice president

Frank J. Zielsdorf has been made a vice president of the Westinghouse Air Brake Co., Pittsburgh, Pa. He was formerly general manager of the company's Le Roi Division, which produces portable, stationary, and self-propelled air compressors, and rock drills and bits for the construction industry.

A-C promotes

T. L. Mellish has been promoted to manager, parts sales, of the Construction Machinery Division of Allis-Chalmers Mfg. Co., Milwaukee, Wis. With the company since 1936, he has been assistant manager for the past two years.

Southwest Compaction equipment for every earthmoving job



HEAVY DUTY SHEEPSFOOT ROLLERS

SOUTHWEST heavy duty, ARCH TYPE full oscillating Sheepfoot Tamping Rollers meet U.S. Engineers', Bureau of Reclamation and State Highway compaction requirements. Two models are available—10 to 25 tons. Arch type frame unitizes front tongue and rear cross frame to remove pulling strains from oscillating pins. Equipped with the new FORGED, Southwest two piece feet with replaceable tips, or solid wedge-type feet. Timken bearings throughout. 1" drum shells. 60" drum diameters.



MULTIPLE BOX COMPACTION ROLLERS

SOUTHWEST multiple box, Pneumatic Compaction Rollers provide INDIVIDUAL VERTICAL OSCILLATION of wheels and weight boxes to assure uniform compaction regardless of soft spots, stones or boulders in the fill. No bridging or shifting of load from tire to tire because weight boxes oscillate independently. Contractors report TIRES LAST OVER 3 TIMES LONGER with multiple box type as compared to conventional single box design. Available in five models from 10 to 100 tons. Adaptable to any tractor.



VERTICAL-PAK SELF-PROPELLED ROLLERS

SOUTHWEST Vertical-Pak provides INDIVIDUAL VERTICAL OSCILLATION of rear wheels for the first time in self-propelled machines. Exclusive design affords uniform compaction on uneven surfaces, and new compaction efficiency. Seating arrangement and REVERSE-O-MATIC transmission place operator in a position to see both forward and rear operations. All five rear wheels powered through SELF-LOCKING differential chain drives.



SEMI-TRAILER SPRINKLER TANKS

SOUTHWEST Sprinkler Tanks are available in two models—5,000 and 6,000 gallon capacities—and may be adapted to any make two or four wheel tractor. Equipped with front and rear spray bars, plus gravity bar, these units provide a spray width up to 55 feet. The 6" self-priming centrifugal pump, with in-seat air-actuated controls, has a 1500 gpm capacity. Powered by 6-cyl. gasoline engine. Pressure bar nozzles are adjustable. Large tires assure adequate flotation.



HEAVY DUTY CABLE-OPERATED RIPPERS

SOUTHWEST heavy-duty Rippers are available in four sizes, from 5,000 to 25,000 pounds. Structural features, such as box beam sections of special design, are constructed to withstand the most severe job conditions. Predetermined and set angle of the three ripper shanks assure quick, positive penetration up to 48 inches. Special center shanks can be furnished for 60 inch penetration. Shanks are of special heat treated steel. Points are hardfaced and replaceable. Wheels are drum type, Timken bearing mounted. COMPACTION IS BEST WHEN YOU USE SOUTHWEST.

Southwest PRODUCTS ARE SOLD AND SERVICED BY YOUR CATERPILLAR® DEALER

CONSTRUCTION MACHINERY DIVISION
Southwest Welding & Manufacturing Co.

ALHAMBRA, CALIFORNIA

For more facts, use Request Card at page 18 and circle No. 331

mits flexi-

the bulk-
only when
shows a
n of 4,000
orch, only
ensioned.
ished by
ck at the
rete has
ngth, and
operation

ts

d to ship
by rail,
eted pre-
ed up by
ane and
ckpile ad-
tly to the
extend be-
sting beds
it stifleg
hern edge
y a Clyde
ses its 75-
mbers or
ge in the
ck makes
y conven-
ter sepa-
nd Water-
access by
n coast.
een built
the plant
sed batch
pments.
also been
nt site is
s. 17, the
y feeding

al is keep-
out pre-
company
does not
ringboard
commer-
units, and
eed.
THE END

ake

een made

stinghouse
a. He was
r of the
on, which
uary, and
ssors, and
construc-

THE END

ake

een made

stinghouse
a. He was
r of the
on, which
uary, and
ssors, and
construc-

construc-

omoted to

Construc-

of Allis-

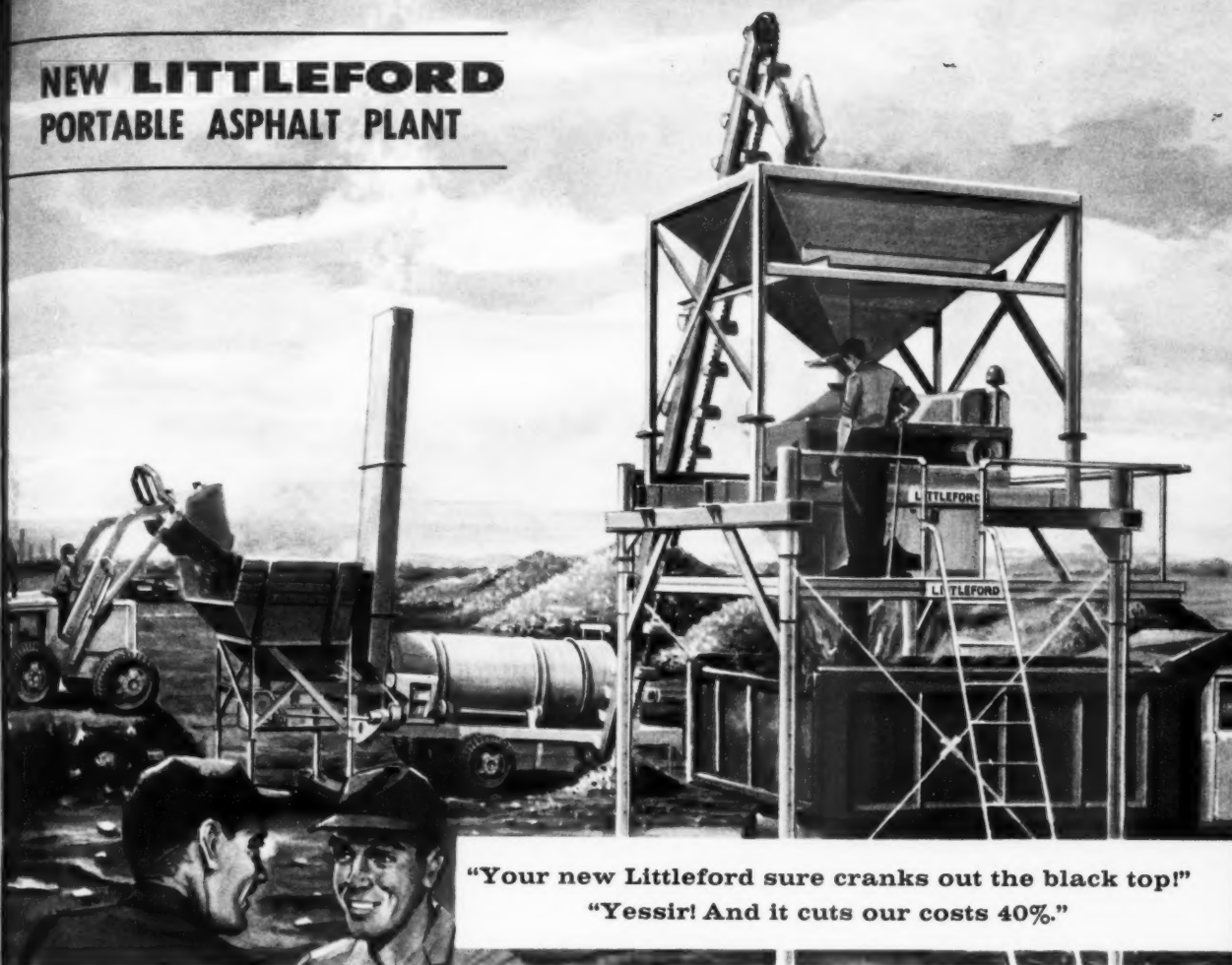
ukee, Wis.

36, he has

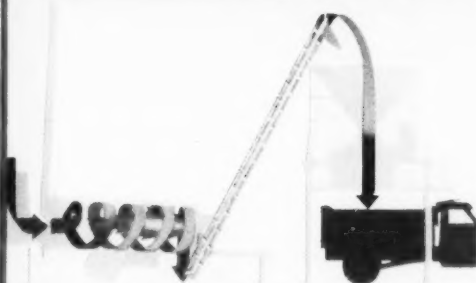
r the past

ENGINEERS

NEW LITTLEFORD PORTABLE ASPHALT PLANT



"Your new Littleford sure cranks out the black top!"
"Yessir! And it cuts our costs 40%."



TOP EFFICIENCY IN ASPHALT PLANT

DESIGN AND OPERATION

- 1 Dual feeder bin proportions and feeds aggregate directly into dryer.
- 2 Rotating steel dryer quickly and efficiently dries aggregate.
- 3 Hot elevator delivers a continuous cascade of aggregate into storage hopper.
- 4 Storage hopper holds and discharges aggregate as required.
- 5 Batching hopper measures aggregate in exact 10 cu. ft. batches in reserve for the pugmill.
- 6 Pugmill thoroughly mixes hot dried aggregate and bitumen into a hot bituminous concrete.
- 7 Self-elevating platform permits discharging of bituminous concrete directly into trucks.

Contractors: Make Money with your own asphalt plant.
Get the facts—mail this airmail card today for your free copy of bulletin 37 giving complete information.

U.S.A.

The 30-ton rated capacity of the new Littleford Portable Asphalt Plant now gives contractors big plant performance at small plant cost. Saves up to 40% on bituminous concrete costs... because the contractor can use his equipment more efficiently. Labor costs are drastically reduced, too, because you can take the Littleford Portable Asphalt Plant right to the job site.

With his own independent source of bituminous concrete,

the contractor has complete control. He can plan and carry out black top operations when and where he wishes, around the clock and around the calendar.

The new Littleford Portable Asphalt Plant is quality built... for continuous output, for producing all types of mixes at lowest cost. Investigate this new plant today... discover the money-making possibilities you can realize!

LITTLEFORD BROS., INC., 457 EAST PEARL STREET, CINCINNATI 2, OHIO

- ☐ ASPHALT PLANT—Rush me, without obligation, bulletin 37 that illustrates and describes the new Littleford Model 121-30 Portable Asphalt Plant.
- ☐ PAVER-SPREADER—Bulletin 33 on the True-Lay Paver Spreader shown on the next page.
- ☐ SPRAY MASTER—Bulletin 14 on the Spray Master Bituminous Distributor also shown on the next page.

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

INDIVIDUAL _____ TITLE _____



LITTLEFORD SPRAY MASTER

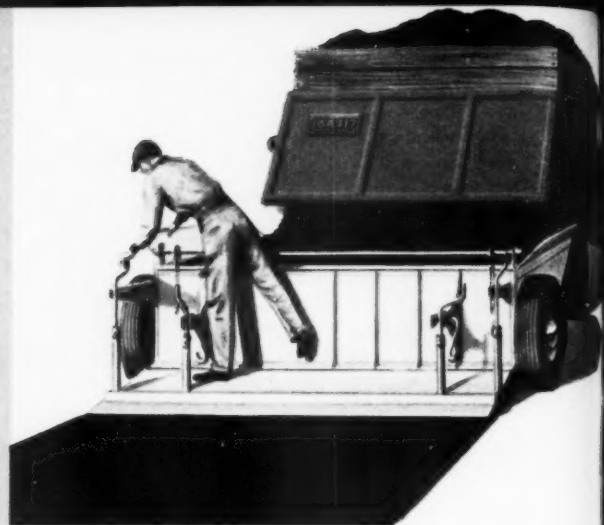
BITUMINOUS DISTRIBUTOR

Design ingenuity has built into the Littleford Spray Master an *unequalled* combination of engineered features that assure faster, better and cheaper spraying. Two of these are illustrated here:

Single Lever Control—Not four confusing levers, but one easily operated capstan-type handwheel for fast action. Controls spraying, tank circulation, transfer and draining operations—and filling, too.

Unobstructed Operator View—There are no overhanging obstructions to hide the bar. It's fully visible to the operator, allowing immediate on-the-spot adjustments for complete coverage.

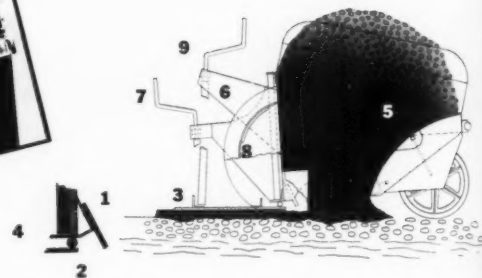
There are many other exclusive Littleford design and operating advantages that make the Spray Master first choice of black top contractors everywhere. For complete information, send for bulletin 14 . . . use convenient airmail reply card below.



TRUE-LAY PAVER-SPREADER

It's the compaction that counts . . . and you can count on True-Lay for true compaction. Reason: the Littleford True-Lay is heavier, and it's designed so that 75% of the combined weight of the unit and the asphalt is brought to bear on the screed.

The 2-in-1 tow type True-Lay does double duty: (1) paves a mat from 4-ft. to 10-ft. wide, up to 6" in depth; and (2) spreads 4" maximum size stone. For bulletin 33 containing further information, mail reply card below.



- | | |
|----------------------|--|
| 1 strike-off blade | 5 material hopper |
| 2 compaction chamber | 6 patented balancing beam |
| 3 adjustable screed | 7 jacks for adjusting screed |
| 4 screed hinge | 8 balancing wheel |
| | 9 jacks for adjusting balancing wheels |

BUSINESS REPLY CARD

6¢ postage will be paid by
LITTLEFORD BROS., INC.
457 EAST PEARL STREET
CINCINNATI 2, OHIO

FIRST CLASS
Permit No. 23
(Sec. 34.9 P.L.B.R.)
Cincinnati, Ohio

AIRMAIL

LITTLEFORD



WORLD'S
MOST COMPLETE LINE OF
COMPLETELY ENGINEERED
BLACK TOP EQUIPMENT

SEND AIRMAIL REPLY CARD
REQUEST YOUR FREE LITERATURE



A wall of L. B. Foster heavy-duty sheet piling was used to ring this steep-sloped area, while a Raymond pile driver, utilizing a McKiernan-Terry No. 7 steam hammer, sank piles for a deep bank-vault foundation. Despite large water pressures and occasional sloughing of the slopes, the sheet-pile wall held successfully throughout the driving.

Case history

Sheet-pile wall protects bank-vault construction

Tolboe & Harlin Construction Co. had smooth going on a Salt Lake City, Utah, foundation job—until the owner decided to add a third basement.

The Salt Lake City contractor had excavated 33 feet below street level to reach the second basement level of the new Federal Reserve Bank Building. The soil had been mostly dry bank-run gravel, so slopes were cut at a steep angle with little bracing required.

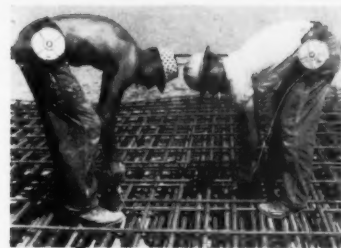
But then the owners decided to add a larger vault, covering half the second basement area and extending 12 feet deeper. The material to be excavated was saturated dense clay, more than two-thirds of which was under the natural water table. And subsequent foundation pile driving would certainly increase the chance of slope failure.

Before excavating, Tolboe & Harlin called in the Raymond Concrete Pile Co. to drive 30-foot lengths of heavy Z-38 sheet piles on the two street sides, and 20-foot lengths of lighter MP-116 piles along the two interior sides. The piling, rented from the L. B. Foster Co., was driven with a McKiernan-Terry No. 7 steam hammer. As excavation progressed, the sheet-pile walls had to be braced strongly to resist the huge pressures.

With the braces in place, Raymond went ahead driving its cast-in-place step-taper concrete foundation piles. The bottom of the excavation was so unstable that Raymond's big Manitowoc pile driver had to operate on mats. Throughout the driving, however, the sheet-pile walls protected the deep vault area, despite large water pressures and occasional sloughing of the high slopes.

When the foundation piles were in, Tolboe & Harlin poured the caps and built heavy concrete foundation walls. With the loads transferred to the walls, the sheet piling was extracted and returned to the L. B. Foster Co.

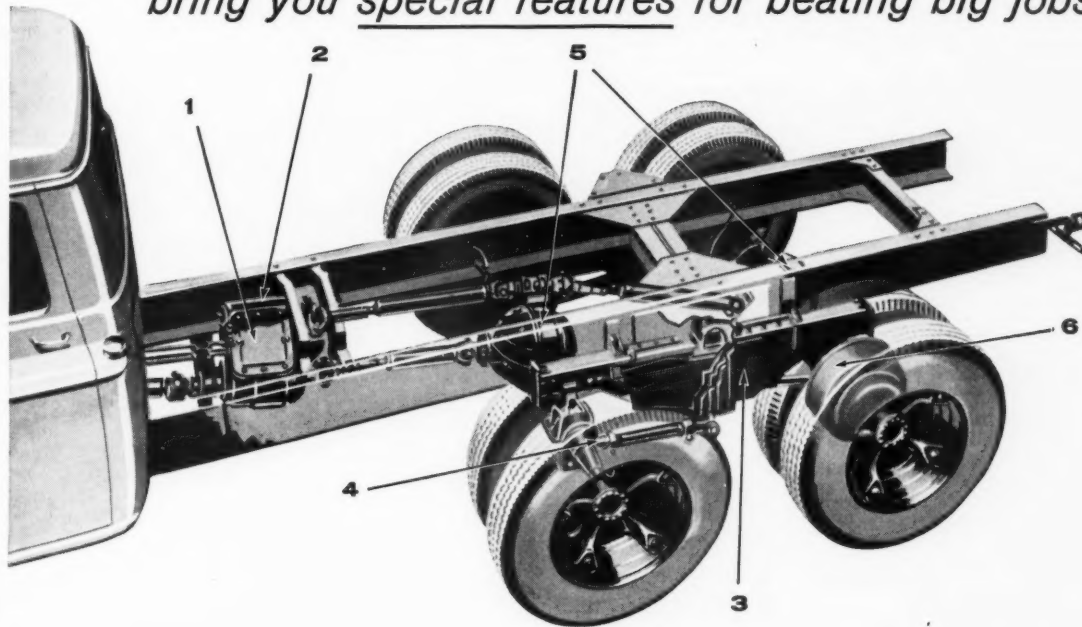
For further information on this sheet piling, write to the L. B. Foster Co., Dept. C&E, P. O. Box 1647, Pittsburgh 30, Pa., or use the Request Card at page 18. Circle No. 14.



Case history: Using Ideal tie-wire reels, carried on either right or left hip, workmen average 6 to 8 more ties per man per minute. The dispenser is also said to reduce waste by up to one-third, as well as eliminate the dangers associated with wire tying from a coil slung over the shoulder. The reel handles annealed or galvanized wire from 14 to 20 gage. When depleted, the wire filler can be replaced within a few seconds. For further information write to the Ideal Reel Co., Dept. C&E, 1424 Madison St., Paducah, Ky., or use the Request Card at page 18. Circle No. 160.

CHEVROLET'S NEW TANDEM

bring you special features for beating big jobs!



Because of their unique features, Chevrolet's new Triple-Torque tandems are more economical to operate. They're designed to bull their way through the tough spots with tremendous traction... with less stress and wear on parts!



Here are some of the design advantages that make Chevrolet tandems tops on big, tough jobs:

1. Chevrolet's exclusive **TRIPLE-TORQUE DRIVE** is provided by individual propeller shafts driven from a 3-speed auxiliary transmission right in the power divider.

2. Integral **3-SPEED POWER DIVIDER** can be shifted instantly to single axle drive for economy or dual axle drive for full traction over rugged roads.

3. The Triple-Torque tandem's articulated **WALKING BEAM** assures owners of greater ground clearance... the utmost flexibility for operation on rough terrain.

4. **"TRACKING" WHEELS**, because of Chevrolet's rubber-bushed steering torque rods

and walking beam ends, stay in alignment on straight roads, follow curves. Increase tire life, driver control.

5. Two built-for-work **15,000-LB.-CAPACITY AXLES** with 7.20 to 1 ratios! Choice of standard 7,000-lb. or extra-cost 9,000-lb.-capacity front axle.

6. **BIG TWIN-ACTION BRAKES** are designed to last! Extra braking power with heavy-duty Hydrovac power brake. Full-Air or Air-Hydraulic brakes optional at extra cost.

Let your Chevrolet dealer show you these, and the many more exclusive tandem features designed to get your big jobs done quickly, dependably and economically!... Chevrolet Division of General Motors, Detroit 2, Michigan.



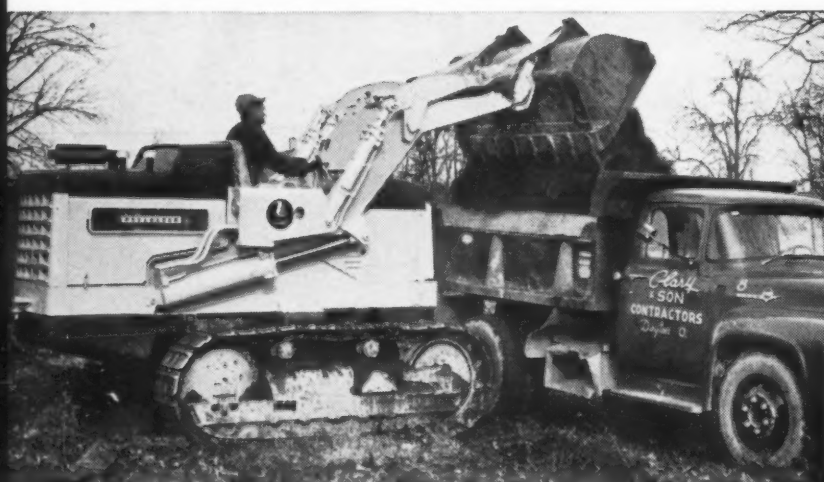
CHEVROLET TASK-FORCE TRUCKS

For more facts, use Request Card at page 18 and circle No. 333

model 12 **PAYLOADER®**



Outperforms anything on tracks because there's . . . N



BUD CLARY, Partner of Clary & Son, Contractors in Dayton, Ohio, says, "The Model 12's maneuverability, balance, speed and ease of operation enables the operator to load out more yardage per hour than regular loaders of larger capacity. My operators tell me there is nothing to compare with the operating ease of this 'PAYLOADER'."



FERN WEISS, Contractor of Springfield, Oregon, says, "Loading this river bank gravel, which is extremely heavy per yard, I find the 'PAYLOADER' extremely stable; there is not the slightest tendency to tilt, even with the bucket heaped full. Easiest as well as fastest loader I have ever operated."

"Best money-maker I ever owned!"

"I can bid lower and still make as good a profit" says John Beniger, busy Sheboygan, Wis. contractor

"After many years of experience digging basements and grading, I thought I knew what a tractor-shovel could and could *not* do. But a year ago I bought a model 12 'PAYLOADER'. Soon I found out I had a new kind of tractor-shovel under me — that was easier to handle, that was faster, that had more digging power, a new kind of balance and that seated me where I got a smoother ride and could really watch the bucket action. I've got 1,000 hours on it now and I can't say enough good things about it."

More production

"It's production that puts money in the bank and it's more speed, digging power and balance built into the 12 that really moves dirt. I can dig an average basement with it in 3 hours less time — can load a 10 yd. truck from a stockpile in 1 minute. These are just two examples of what the model 12 can do — and all without strain on the driver."

Power-shift and power-steer

"Operating the Model 12 is a cinch. Steering requires only a light touch on the steering levers and there are no back-breaking foot brakes to pump in the process. Any speed change up or down is made instantly, on-the-go with only finger-tip effort. Forward-reverse shifting is just as easy. It's a real operator's dream."

"Only a man who has put in a day on a regular tractor-shovel can appreciate what this model 12 power-shift and power-steer means to the driver. Digging basements requires about 700 shifts and turns a day, and when you've pushed and pulled with both arms and pushed with both feet that many times a day on a conventional machine, you've really had it."

Works where and when others can't

"See that photo where I'm backing up out of a basement with a full 2-yard load? Don't try it with a front-engine tractor-shovel — even with a smaller load. I do it all the time and it saves turns *and* time in basement work. That's one big advantage in not having most of the machine weight on the front idlers. Another advantage is that I can work on soft, spongy ground when others bog down at the front. Then, of course, there is the added traction I get from more even weight distribution along the tracks . . . also less strain on the front idlers."

Low Maintenance

"The 12 is the most ruggedly built tractor-shovel I ever owned or ever saw. In almost 1,000 hours of heavy work maintenance and downtime have been practically zero, and that's important to me and also to my customers. They don't like to have a job delayed by machine failure any more than I do. There are many more good things about the model 12 that I could tell you, but they all add up to the fact that, as far as I'm concerned, it makes all other tractor-shovels obsolete."

... NOTHING LIKE IT ON TRACKS

The Model 12 is a complete, unit design 1 3/4 yd. tractor-shovel, instead of a tractor attachment. Its rear-mounted engine counterbalances the bucket load at all times . . . the full length of the tracks grip the ground, enabling you to dig more, carry more and deliver more.

You get operating speeds engineered for shovel work, a transmission designed for shovel work, plus ease of operation and maneuverability no other machine can provide. This Model 12 outperforms anything in its size . . . even machines with 50% larger bucket capacity.

You can't compete if your equipment is obsolete . . . so get full information on the remarkable Model 12 from your near-by "PAYLOADER" Distributor.



Get the COMPLETE story

on the radical new design, MODEL 12 "PAYLOADER", the complete tractor-shovel, with improved traction, stability and balance "built-in" for the best performance in digging, carrying and dumping.

THE FRANK G. HOUGH CO.

762 Sunnyside Ave., Libertyville, Ill.

Send literature and other data on the 1 3/4 yd. model 12 "PAYLOADER"

Name _____

Title _____

Company _____

Street _____

City _____

State _____

6-C-1



Modern Materials Handling Equipment

THE FRANK G. HOUGH CO.

LIBERTYVILLE, ILLINOIS

SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

For more facts, use coupon, or Request Card at page 18 and circle No. 334





With this Model HU Payloader, owned by the Haddon Trenching Co., backfilling time was reduced by 25 per cent over methods previously used on pipelaying jobs.

Case history

Loader trims backfilling time by one-fourth

On a pipelaying job in Camden County, N. J., the use of a Hough Model HU Payloader reduced backfilling time by 25 per cent over the wheel-tractor method previously used.

The job involved laying an estimated 4,000 linear feet of 12-inch cast-iron water main for the New Jersey Water Co., Haddon Heights. The Haddon Trenching Co., of Barrington, performed the work, employing the Model HU for general backfilling and loading out of excess material.

Said R. D. Moon, owner of the firm, "The trench, 5 to 8 feet deep, 8 feet wide, and 3,000 feet long, was backfilled in 29 hours."

For further information about Payloaders, write to The Frank G. Hough Co., Dept. C&E, 822 Seventh Ave., Libertyville, Ill., or use the Request Card at page 18. Circle No. 155.

Case history

Fuel mixture eliminates engine gases in tunnel

Regular diesel fuels that created a serious fume hazard in a western tunnel project were replaced by a mixture of white kerosene and Marvel Mystery oil.

The problem was encountered during the construction of a 3-mile tunnel, part of the Fremont Canyon Project in Wyoming, where gases from the exhaust systems of diesel-powered vehicles were causing considerable trouble to tunnel workers. Contractor on the job was the Coker-Kewit-Cunningham Construction Co., of Casper, Wyo.

A fuel mixture containing 1 per cent Marvel oil, or a 55-gallon drum to every 5,500 gallons of kerosene, reportedly resulted in a clean-burning fuel that produced no objectionable colors or gases.

For further information about Marvel oil, write to the Emerol Mfg. Co., Inc., Dept. C&E, 242 W. 69th St., New York 23, N. Y., or use the Request Card at page 18. Circle No. 121.

Preliminary data compiled by the Bureau of Public Roads shows motor vehicle travel in February to be 4.3 per cent less than in February, 1957.

Film on engineering aspects of water development

The U. S. Bureau of Reclamation has released a new documentary film, "By Their Deeds", which is available for free showing to college engineering groups, high school students, and other technical and general audiences. The 28-minute, 16-mm sound and color film shows the engineering aspects of water-resource development in irrigation, hydroelectric power production, flood control, and recreation.

The film details the work of the civil, mechanical, hydraulic, electrical, and other engineering specialists and scientists in planning, designing, building, and operating such structures as dams, canals, tunnels, and power and pumping plants.

Scenes show dams; one of the world's largest testing machines; earth and concrete work.

Prints of the film are available from the Office of Commissioner, Att: 140, Interior Bldg., Washington, D. C., or Assistant Commissioner and Chief Engineer, Att: D-209-D, Bldg. 53, Denver Federal Center, Denver, Colo. The film may also be obtained from the regional directors at P. O. Box 937, Boise, Idaho; P. O. Box 2511, Sacramento 11, Calif.; Administration Bldg., Boulder City, Nev.; P. O. Box 360, Salt Lake City, Utah; P. O. Box 1609, Amarillo, Texas; P. O. Box 2553, Billings, Mont.; and Bldg. 46, Denver Federal Center, Denver, Colo.

The Dalon Team sets the stage for the Biggest Shopping



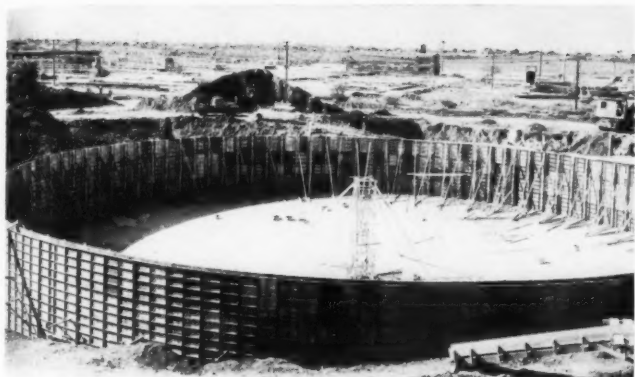
Against a background announcing the multi-million dollar center, C.I.T. division vice president Edward Mayer and contractor Lam Dalon discuss job progress.



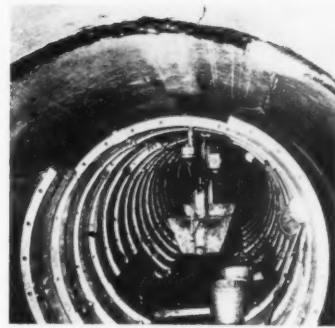
A Dalon wagon drill prepares a shot in a rocky stretch of terrain. The job site included many areas of heavy rock and earth mixtures.

C.I.T. CORPORATION • MACHINERY AND EQUIPMENT

ATLANTA • BOSTON • CHICAGO • CLEVELAND • DALLAS • DENVER • DETROIT • HOUSTON
MEMPHIS • NEW YORK • PHILADELPHIA • PORTLAND • SAN FRANCISCO



Case history: In the construction of the San Antonio sewage plant on the Corpus Christi highway, Curtis Hancock, a subcontractor for Cage Bros., of San Antonio, utilized Universal forms on all of the concrete work. Mr. Hancock, in comparing this job with Universal forms against his previous job with forms he made himself, estimated he saved at least four days in time on his current work. "We formed about 12,000 square feet of concrete with these panels at a cost of less than 19 cents per square foot in the erection and stripping of forms", Mr. Hancock said. He added that in five days, his crew was able to erect and align the forms, tie the steel, and pour the walls on the 130-foot final clarifier tank. For further information about the Universal forms, write to the **Universal Form Clamp Co.**, Dept. C&E, 1238-48 N. Kostner Ave., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 83.



Armco liner plates have been placed in this weakened sewer; the space between the plates and the original pipe will be grouted. Use of the monorail to move materials speeded up construction.

Case history

Save failing sewer pipe with metal liner plates

The problem of restoring a structurally failing sewer, located 20 to 25 feet below the surface of an Illinois school campus, was solved by the use of Armco light-gage liner plates.

The failing pipe was a 60-inch-diameter rigid pipe storm sewer situated beneath the newly paved parking lot of the Highland Park High School, Highland Park, Ill.

Consulting engineer James Anderson III, of Lake Forest, Ill., determined that lining the pipe, instead of cutting through the new pavement, was the most economical choice.

The erection crew moved in at the outfall end of the system. A monorail and car, operated by storage battery, was hung from the top of the pipe. This unit enabled the crew to transport into the 385-foot sewer the Armco liner plates, heavy hydraulic jacks, and material for grouting the void between the two structures.

The project was completed on time, and no injuries were incurred.

For further information write to Armco Drainage & Metal Products, Inc., Dept. C&E, 703 Curtis St., Middletown, Ohio, or use the Request Card at page 18. Circle No. 135.

Atlas Copco news

S. H. Ekefalk and Eric Ryd have been appointed managing directors of Atlas Copco AB, Stockholm, Sweden, manufacturer of compressed-air equipment. Ekefalk is former technical director and vice president of the Swedish State Power Board; Ryd has been technical director of the firm for the past two years.

Atlas Copco Eastern, Inc., a subsidiary of Atlas Copco AB, has moved its executive headquarters and north-east district offices from 151 Linwood Ave., Paterson, N. J., to larger quarters at 610 Industrial Ave., Paramus, N. J.

Mead Specialties news

John F. Tindall has been appointed manager of the Tractor Division of Mead Specialties Co., Chicago, Ill. Tindall holds an engineering degree from Princeton University, and a master's degree in business administration from Stanford University.

Shopping Center in Dixie!

C.I.T. is On the Job, too

Despite rain, snow, ice and some of the South's lowest mercury readings of the century, the Dalon Construction Company of Atlanta, Georgia, moved $\frac{3}{4}$ of a million yards of earth on time! The job: the new \$15 million Lenox Square shopping center. The secret? The broad experience of Lam Dalon and his construction associates *plus* a balanced team of heavy earth-moving equipment.

C.I.T. Corporation financing helped Lam Dalon build his high-capacity fleet over the past 12 years. On this current project alone, C.I.T. helped Mr. Dalon purchase over \$200,000 of heavy equipment. In turn the Dalon Construction Company has built its "equipment ability" to the point where this firm gets a good share of profitable earth-moving contracts—and a reputation as one of the top-

rated grading firms in the entire Georgia area.

How Job-Engineered Finance Plans Can Help You

Payd Plan equipment financing terms to 6 years with payment schedules related to depreciation, or equal monthly payments over 36 months, or skip-payment plans where needed . . . these are just a few of the helpful financing tools offered to you by C.I.T. Corporation.

In addition to equipment purchase financing, C.I.T. can help you improve your bid and bond capacity, meet current operating expenses or other business needs by arranging capital loans. C.I.T. representatives know how to lay out "job-engineered" finance plans, carefully devised to fit your needs. Why not call or write? No obligation, of course.



Here a Cat DW21 teams up with a model 470 scraper to clear a rocky patch of ground.



Contractor Lam Dalon shows C.I.T.'s Georgia representative R. E. "Bus" Wilson how he proposes to use his new equipment to complete the job on schedule.

EQUIPMENT FINANCING

DETROIT • HOUSTON • JACKSONVILLE • KANSAS CITY • LOS ANGELES
SAN FRANCISCO • IN CANADA: CANADIAN ACCEPTANCE CORPORATION LIMITED



For more facts, use Request Card at page 18 and circle No. 335



Jointless paving projects started by two states

Continuous reinforced-concrete paving will be done this season in two more states—Maryland and Michigan.

Officials of both states have been keeping tabs on this type of paving work in Pennsylvania for the past two years, and they plan to use the information gained from these projects in their own states.

This type of paving eliminates one of the biggest problems on concrete

roads. In a continuous reinforced-concrete slab, cracks no more than .02 to .04 inches wide occur at intervals of 4 to 6 feet. They are kept from getting any wider by the extra amount of steel in the slab. These cracks are so small that they cannot be seen or felt by a motorist. Maintenance of traverse joints on this type of road is unnecessary, since dirt and water cannot enter the small cracks in any appreciable amounts.

Maryland program

Maryland is constructing a total of 3.815 miles of continuous paving, interspersed with conventional control sections, along the Baltimore-Harrisburg Expressway, which is still under construction. There will be a 2.453-mile stretch north of the Gunpowder Falls Bridge, about 18 miles north of Baltimore, and a 1.362-mile section south of the bridge.

North of the bridge, roadway lanes

are 25 feet wide; south of the bridge, their width is 24 feet. Crusher-run stone subbase will be used for both sections, and its depth will be from 6 inches on the outside shoulder to 8 inches in the center of each lane.

Variables will be introduced in the paving for test purposes. North of the bridge, the slab thickness will be 8 inches, and No. 5 deformed bars will be used in amounts of 5, 6, and 7 per cent. The conventional control

**Call us for
on-the-job
service—
any tire,
any job,
anywhere!**

B.F. Goodrich



FAST, efficient B.F. Goodrich on-the-job tire service is as close as your phone. We are trained for the specialized task of servicing off-the-road tires, no matter how big the tires, how intricate the equipment, how complicated the repair job.

Our B.F. Goodrich Servicemobiles are equipped with the latest power tools and devices to give you expert service. Save on costly downtime. Eliminate unnecessary delays that destroy work schedules. Cut

operating costs. *Call us* the next time you need on-the-job tire service.

Why not call *right now* to find out about our complete program? B.F. Goodrich preventive tire maintenance. Without obligation we will inspect all your tires, point out tires that should be repaired or replaced, select tires for retreading by factory-tested and proved B.F. Goodrich methods, set up a proper inflation program and start you on a program of regular tire rotation and inspection.

Specify B.F. Goodrich Tubeless or tube-type tires when ordering new equipment



B.F. Goodrich Servicemobiles are equipped with hydraulic cranes, pneumatic wrenches, bead jacks and all the latest tools for efficient on-the-job tire service.

See us for B.F. Goodrich off-the-road tires and service or check Yellow Pages of phone book for more complete listing in your area

B.F. Goodrich

CONTRACTORS AND ENGINEERS

**Both Maryland and Michigan start
laying and testing continuous
reinforced-concrete pavements this season**

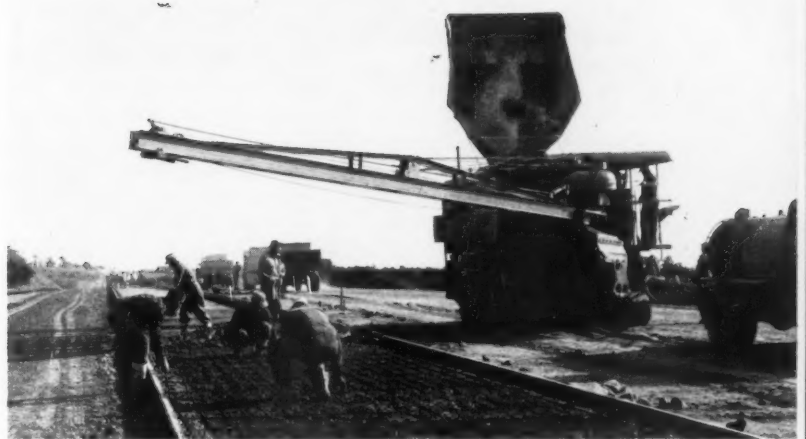
sections will be 9 inches thick, and joints will be spaced at 40 feet.

South of the bridge, the steel will remain constant at 5 per cent; the variable here will be the size of the bars, Nos. 4, 5, and 6 being used. Bar-mat sections to be used are 16 feet long and 6 feet 2 inches wide, and two of them will be required per lane. Either a sawed or formed longitudinal joint—the same as is used for conventional paving—will be used be-

tween the traffic lanes.

Three types of end joints will be used. There will be a sliding-type steel joint, fabricated mostly of plate, and a combination steel and rubber joint, so arranged that there will be no extrusion or compression of the rubber. An area at the end of the section will be kept closed by constant maintenance.

Most of the research—done with
(Continued on next page)



Reinforcing is laid to cover a first lift of concrete for a jointless pavement. Stretches of continuous reinforced concrete are being laid this summer in Maryland and Michigan so that research can make strides on this type of paving.

ALABAMA

ANNISTON . . . Adams 5-2571
BIRMINGHAM . . . Fairfax 2-0361
DECATUR . . . Elgin 3-9523
GADSDEN . . . Liberty 6-5271
HUNTSVILLE . . . Jefferson 6-2487
MOBILE . . . Hemlock 2-2881
MONTGOMERY . . . AMherst 2-1661
SELMA . . . Trinity 4-8254
TUSCALOOSA . . . Plaza 8-8312

ARIZONA

PHOENIX . . . Alpine 3-6168
TUCSON—Baum & Adamson . . . Main 3-3681
YUMA—Conner Tire Co. . . Sunset 2-2547

ARKANSAS

BLITHEVILLE . . . Poplar 3-8116
CAMDEN . . . Temple 6-9334
EL DORADO . . . Union 3-7188
FORT SMITH . . . Sunset 3-4124
HOT SPRINGS . . . National 3-6674
LITTLE ROCK . . . Franklin 4-5066
MALVERN . . . 409
PINE BLUFF . . . Jefferson 4-5123

CALIFORNIA

BAKERSFIELD . . . Fairview 4-4701
BELL GARDENS—Gardner Tire Sales . . . Ludlow 8-5165
DOWNEY—Paramount Tire Co. . . Ludlow 7-5789
EUREKA . . . Hillside 2-5700
FRESNO . . . Adams 3-5216
LOS ANGELES . . . Richmond 9-6171
MODESTO . . . LAMbert 2-1005
OAKLAND . . . Highgate 4-2800
SACRAMENTO . . . Gilbert 2-3811
SAN BERNARDINO . . . Turner 8-0947
SAN DIEGO . . . Belmont 2-3131
SAN FRANCISCO—Perry & Whitelaw, Inc. . . Underhill 1-1801
SAN JOSE . . . Cypress 8-6050
SAN MATEO—Perry & Whitelaw, Inc. . . Diamond 2-2051
STOCKTON . . . Howard 6-9691
VAN NUYS—Ben Rudnick . . . Stanley 3-2066

COLORADO

COLORADO SPRINGS . . . MEIrose 4-8661
DENVER . . . Pearl 3-3739
DENVER . . . Keystone 4-0175
FT. COLLINS . . . Hunter 2-7453
PUEBLO . . . Lincoln 4-1663
STERLING . . . Lawrence 2-0471

CONNECTICUT

MIDDLETOWN—Bridgeport Tire & Recapping Co. . . Forest 8-1644
HARTFORD . . . Jackson 7-2121
NEW HAVEN—Peat & Voigt, Inc. . . Locust 5106
NORWICH—Falcone's Servicenter . . . Turner 7-9051

DISTRICT OF COLUMBIA

WASHINGTON . . . Republic 7-5525

FLORIDA

DAYTONA . . . Clinton 3-8222
FT. LAUDERDALE . . . Jackson 4-8662
JACKSONVILLE . . . Elgin 4-2801
LAKELAND . . . Mutual 2-0331
MIAMI—Norton Tire Co. . . Franklin 4-0538
OCALA . . . Marion 2-4254
ORLANDO . . . Garden 3-3161
PANAMA CITY . . . Poplar 3-3981
PENSACOLA . . . Hemlock 3-3181
TAMPA . . . 7-1197
WEST PALM BEACH . . . Temple 3-4181
WINTER HAVEN . . . Cypress 3-8325

GEORGIA

ALBANY . . . Hemlock 2-6491
ATLANTA . . . Jackson 2-5035
AUGUSTA—Bowen Bros. Hardware Co. . . 4-5581
COLUMBUS . . . Fairfax 2-3581
DECATUR . . . Drake 7-1785
GAINESVILLE—Gainesville Tire Co. . . Leno 2-2551
MACON . . . 3-4456
ROME . . . 2-2846
SAVANNAH . . . Adams 6-0631

IDAHO

BOISE—Hill's . . . 4-5557
IDAHO FALLS—Yellowstone Tire Co. . . Jackson 2-7513

ILLINOIS

ALTON . . . 3-7754
AURORA . . . 7-1116
BLOOMINGTON . . . 7-8213
BLOOMINGTON—C. W. Frey & Son . . . 4-3259
BLUE ISLAND . . . Fulton 8-5200
CAIRO . . . Main 86
CENTRALIA . . . 5669
CHAMPAIGN . . . Fleetwood 2-5121
CHICAGO . . . Norwalk 1-8500
CHICAGO—Chicago Tire Co. . . Monroe 6-6400
CHICAGO HTS. . . Skyline 5-2532
DECATUR . . . 5258



ELMHURST . . . Terrace 2-3160
EVANSTON—Taich Tire & Battery . . . Greenleaf 5-5230
FOREST PARK . . . FO 8-5100
FREETOWN . . . MAIN 892
GALESBURG—Quint's Service . . . 4961
JACKSONVILLE . . . Chestnut 5-6194
JOLIET . . . 6-5461
LA SALLE—Tom's Tire Shop . . . 931
MATTOON—Mack's Tire Service . . . Adams 5641
MOUNT VERNON—Ranmar's Standard Tire Co. . . 80
OLNEY . . . Express 3-2137
PEORIA . . . 4-4181
QUINCY . . . Baldwin 2-4800
ROCKFORD . . . 2-6619
ROCK ISLAND . . . 8-6374
SPRINGFIELD . . . 3-3613
VANDALIA . . . 638
WAUKEGAN . . . Delta 6-7733

INDIANA

CRAWFORDSVILLE . . . Emerson 2-1040
ELKHART . . . 2-5605
EVANSVILLE . . . Harrison 5-2408
FT. WAYNE . . . Anthony 9166
GARY . . . Turner 5-7438
HAMMOND . . . Westmore 2-5100-01
INDIANAPOLIS . . . MEIrose 3-3407
LOGANSPORT . . . 2766
MARION . . . 2904
MISHAWAKA . . . Blackburn 9-2401
MUNCIE . . . Atlas 8-9937
PERU . . . Gridley 2191
RICHMOND . . . 2-2395
VINNIES . . . 616
W. LAFAYETTE—A-2-Z Tire Co. . . 2-9348

IOWA

CEDAR RAPIDS . . . 4-5165
DENVER . . . CHAPEL 2-6020-27
DAVENPORT . . . 2-2685
DES MOINES . . . Cherry 4-7278
FT. DODGE . . . 7-2761
MAQUOKETA—O. K. Tire Store . . . Olive 2-4494
MASON CITY . . . Garden 4-4935
MUSCATINE . . . AMhurst 3-2524
STANWOOD—Loody Oil Co. . . 3111
WATERLOO . . . Adams 4-4649

KANSAS

HUTCHINSON . . . Mohawk 2-0261
KANSAS CITY . . . Mayfair 1-2205
KANSAS CITY—Missouri Valley Tire Co. . . Mayfair 1-6515
SALINA . . . Taylor 3-2271
TOPEKA—Carothers Tire Co. . . Central 4-5643
WICHITA—Broadway Tire Co. . . AMherst 2-6621
WICHITA . . . Forest 3-1254

KENTUCKY

BOWLING GREEN . . . Victory 3-4308
LEXINGTON . . . 2-8877
LOUISVILLE . . . JUnion 5-4141
MAYFIELD . . . 54
PADUCAH . . . 5-5454

LOUISIANA

ALEXANDRIA . . . 9514
BATON ROUGE . . . Dickens 2-6895
BOGALUSA . . . Republic 2-4264
LAKE CHARLES . . . Center 4-8388
LAKE CHARLES . . . Hemlock 6-0647
MONROE . . . Fairfax 3-0386
NEW ORLEANS . . . Jackson 2-0191
SHREVEPORT . . . 2-3174

MAINE

LEWISTON . . . Lewiston 2-9851

MARYLAND

BALTIMORE . . . Belmont 5-9054
HAGERSTOWN . . . REgent 9-4760

MASSACHUSETTS

BOSTON—Merchants Distributors, Inc. . . Kenmore 6-4780
BROCKTON . . . JUnion 3-0100
LYNN . . . LYnn 2-0297
NEW BEDFORD . . . WYman 2-0275
NORTH ADAMS . . . MOhawk 3-6849
SPRINGFIELD . . . Republic 3-6666
W. SOMERVILLE . . . PROspect 6-4469
WORCESTER . . . Pleasant 5-4397

MICHIGAN

BENTON HARBOR . . . Walnut 5-0041
BIRMINGHAM . . . LUzon 1-6900
DETROIT . . . FOREst 6-4900
ESCANABA . . . 4520-21
FLINT . . . Cedar 2-0169

GRAND RAPIDS . . . GLendale 9-3444
JACKSON . . . State 9-6136
KALAMAZOO . . . Firestone 3-2544
LANSING . . . Ivanhoe 2-0621
PONTIAC . . . Federal 2-0121
PONTIAC . . . Pleasant 2-4101

MINNESOTA

AUSTIN . . . Hemlock 7-4533
DULUTH . . . Randolph 4-8505
HIBBING—Hyde Supply . . . AMherst 3-7511
MINNEAPOLIS . . . Federal 5-1195
MINNEAPOLIS—Jerry Oyas Tire Co. . . Federal 9-0451
ST. PAUL . . . Capitol 2-3617
WINONA—Nelson Tire Co. . . 2308

MISSISSIPPI

BILOXI . . . IDlewood 6-9151
COLUMBUS . . . Fairfax 6-7150
CORINTH . . . 6628
GREENWOOD . . . 70
GULFPORT . . . UNIVERSITY 4-2872
HATTIESBURG . . . JUnion 4-6474
JACKSON . . . 2-0846
LAUREL . . . 4375
LAUREL . . . 2-3128
NATCHEZ . . . 2-1851
VICKSBURG . . . 563
YAZOO CITY . . . 2164

MISSOURI

CARUTHERSVILLE . . . 15
HANNIBAL . . . 138
JOBLIN . . . Mayfair 4-4141
KANSAS CITY . . . Valentine 1-4777
MEXICO . . . Justice 1-3040
POPLAR BLUFF—J. A. Parker Tire Co. . . Sunset 5-3938
ST. CHARLES . . . Randolph 4-3646
ST. LOUIS . . . FOREst 7-9300
SPRINGFIELD . . . 4-2561

NEBRASKA

LINCOLN . . . 2-4497
OMAHA . . . Jackson 4024

NEVADA

RENO . . . Fairview 3-8611

NEW JERSEY

BRIDGETON . . . 9-7191
CAMDEN . . . Woodlawn 4-3191
NEWARK . . . Market 3-4346

NEW MEXICO

ALBUQUERQUE . . . CHapel 3-5587
CARLSBAD . . . Tuxedo 5-2580
GALLUP . . . Union 3-3141
SANTA FE . . . 3-6385

NEW YORK

ALBANY . . . 4-8115
AMSTERDAM—Tenison Tire Wholesalers Victor 2-2250
BUFFALO . . . Grant 4040
NEW YORK . . . JUnion 2-1030
NIAGARA FALLS . . . 5-1275
POUGHKEEPSIE . . . Globe 2-9030
ROCHESTER . . . Glenwood 3-2838
SYRACUSE . . . Granite 6-4018
UTICA . . . 3-7536

NORTH CAROLINA

ASHEVILLE . . . Alpine 3-2726
CHARLOTTE . . . Edison 3-4134
FAYETTEVILLE . . . Hemlock 2-3175
GREENSBORO . . . Broadway 2-3197
RALEIGH . . . Temple 3-3831

NORTH DAKOTA

FARGO . . . 2-7461

OHIO

ASHLAND . . . 3992-1
CHILLICOTHE . . . PROspect 2-9670
CINCINNATI . . . Cherry 1-4050
CLEVELAND . . . PROspect 1-2650
COLUMBUS . . . Capitol 1-6661
DAYTON . . . Baldwin 3-9181
ELYRIA . . . Fairfax 2-3711
HAMILTON . . . Twinbrook 3-4711
MANSFIELD . . . Lafayette 4-5141
MARIETTA . . . Frontier 3-2086
NEWARK . . . FAIRfax 2-2401
NORWALK . . . 2-7171
SPRINGFIELD . . . FAIRfax 3-9747
TOLEDO . . . Cherry 3-1258
WOOSTER—Stuck Tire Company . . . HOWard 2-6906
ZANESVILLE—Goss Supply Co. . . GLadstone 3-0328

OKLAHOMA

ENID . . . Adams 4-5121
MIAMI—Miami Sales Company . . . Kimball 2-2888
OKLAHOMA CITY . . . FOREst 5-1347
TULSA . . . LUther 5-1221
TULSA—Tom P. McDermott, Inc. . . Diamond 3-9188

OREGON

PORTLAND . . . BELmont 6-2106
PORTLAND—Mel Goodin Tire Co. . . BELmont 5-4127
SALEM—Russell's Tire Service . . . EMpire 2-5651

PENNSYLVANIA

ALLENTOWN . . . Hemlock 3-3248
BTHLEHEM . . . UNIVERSITY 7-4184
ERIE . . . 2-3205

LANCASTER . . . EXpress 2-2196
HARRISBURG . . . Cedar 4-6296
HAZELTON . . . Gladstone 4-2481
JOHNSTOWN—McNally Tire & Rubber . . . 5-4321
PHILADELPHIA . . . Pioneer 3-1134
PITTSBURGH . . . Museum 2-8310
POTTSTOWN . . . Faculty 3-6410
READING . . . Franklin 4-2274
TURTLE CREEK . . . Electric 1-2077
WILKES-BARRE—Economy Gas & Oil Co. . . VALley 3-0169
YORK—L. J. Allen Co. . . 5728

RHODE ISLAND

PROVIDENCE . . . Dexter 1-9800

SOUTH CAROLINA

CHARLESTON . . . Raymond 2-8391
COLUMBIA . . . Alpine 4-8135

SOUTH DAKOTA

SIOUX FALLS . . . 4-9979

TENNESSEE

CHATTANOOGA . . . AMherst 7-1176
CLARKSVILLE . . . Midway 5-5606
DYERSBURG . . . ATwater 5-4820
JACKSON . . . 7-8541
KNOXVILLE—Tinsley Tire Co. . . Circle 6-8191
KNOXVILLE . . . Jackson 5-8477
MEMPHIS . . . Broadway 5-8121
MEMPHIS . . . Jackson 7-3351
MORRISTOWN . . . 55
NASHVILLE . . . Alpine 5-6353

TEXAS

AMARILLO . . . Drake 4-5321
AUSTIN . . . Greenwood 6-9155
BAY CITY . . . Circle 5-8329
BAYTOWN . . . JUnion 2-5254
BRYAN—Brazos Tire Co. . . Taylor 3-3078
CORPUS CHRISTI . . . Tulip 4-5841
DALLAS . . . Riverside 1-1201
EL PASO . . . Keystone 3-2478
FORT WORTH . . . Edison 2-9188
HOUSTON . . . GARfield 3-0330
LUBBOCK . . . Capital 7-0141
LUFKIN . . . Porter 5786
MARSHALL—Manly's . . . Webster 5-6776
ODESSA—Odessa Tire & Supply Co. . . Federal 7-4378
ORANGE . . . Tuxedo 4-8321
PORT ARTHUR . . . YU 3-4567
SAN ANTONIO . . . Capitol 7-7278
WICHITA FALLS . . . 322-1122

UTAH

PROVO . . . Franklin 3-6715
SALT LAKE CITY . . . EMpire 4-7856

VERMONT

BURLINGTON . . . UNIVERSITY 2-3901
RUTLAND—Abel's Tire Corp. . . PROspect 3-3700

VIRGINIA

FRONT ROYAL—Board Tire & Battery Co. . . 277
NEWPORT NEWS . . . 6-1329
NORFOLK . . . MADison 2-3287
PORTSMOUTH . . . EXport 7-4673
RICHMOND . . . ELgin 3-3286
ROANOKE . . . Diamond 4-3241
STAUNTON . . . 5-3210
WINCHESTER . . . MOhawk 2-0381

WASHINGTON

SEATTLE . . . ELliott 6668
SPOKANE . . . MAIN 4-5271

WEST VIRGINIA

CHARLESTON . . . Dickens 6-0431
HUNTINGTON—Stettler Tire Co. . . JACKson 3-0197
WHEELING . . . Cedar 2-8660

WISCONSIN

LA CROSSE . . . 4-5065
MADISON . . . ALpine 5-4592
MANITOWOC . . . MURray 4-4712
MILWAUKEE . . . Division 4-286
MILWAUKEE . . . MITchell 5-5640
WAUKESHA . . . LIBerty 2-8675

WYOMING

CASPER—Wyoming Tire Co. . . 3-5701



B.F. Goodrich Tires and service

For more facts, use Request Card at page 18 and circle No. 336

(Continued from preceding page)

about \$30,000 in federal-aid funds—will be handled by the University of Maryland, and a major part of the instrumentation will be performed by Lehigh University, Bethlehem, Pa.

Through research, officials hope to find out the effect of varying amounts of steel on pavement performance; the tensile stresses and compressive stresses as affected by traffic loads and temperature changes; tensile stresses in steel at pre-formed cracks; and bond stresses between steel and concrete. They also want to check crack widths and longitudinal movement; crack patterns at various time intervals, and pavement deflections as related to crack patterns; the surface roughness of the pavements; and

methods of treating construction joints at the end of the pavement.

Michigan work begun

The Michigan State Highway Department, which started construction this spring, is building a 6.07-mile section of dual 24-foot pavement parallel to, and half a mile south of, U. S. 16 near Portland. This project is being done by Lewis & Frisinger Co., Ann Arbor, under a \$2,886,485 contract that includes structures.

Included in this section are two miles of dual continuous mesh-reinforced paving and two miles of dual continuous bar-mat-reinforced paving. Pavement thickness for the continuous reinforced section is 8 inches; the standard control pavement is 9 inches thick. Both are being laid on

a 12-inch granular subbase.

Reinforced bar mats in each lane are in half sections, 16 feet long and 6 feet 2 inches wide. They are made up of eleven longitudinal No. 5 bars, 6½ inches apart, and seven No. 3 transverse bars from 2 feet 3 inches to 2 feet 5 inches apart. Each half bar-mat section weighs about 200 pounds.

The wire mesh sheets are 12 feet long and 11½ feet wide. They contain 45 No. 00000-gage longitudinal wires, 42 spaced at 3 inches, and three spaced at 4 inches. Transverse wires, a foot apart, are of No. 1 gage. Each sheet weighs 303 pounds. Relief sections at the ends of the continuous reinforced pavement will consist of about 500 feet of standard pavement, with 1-inch load transfer expansion

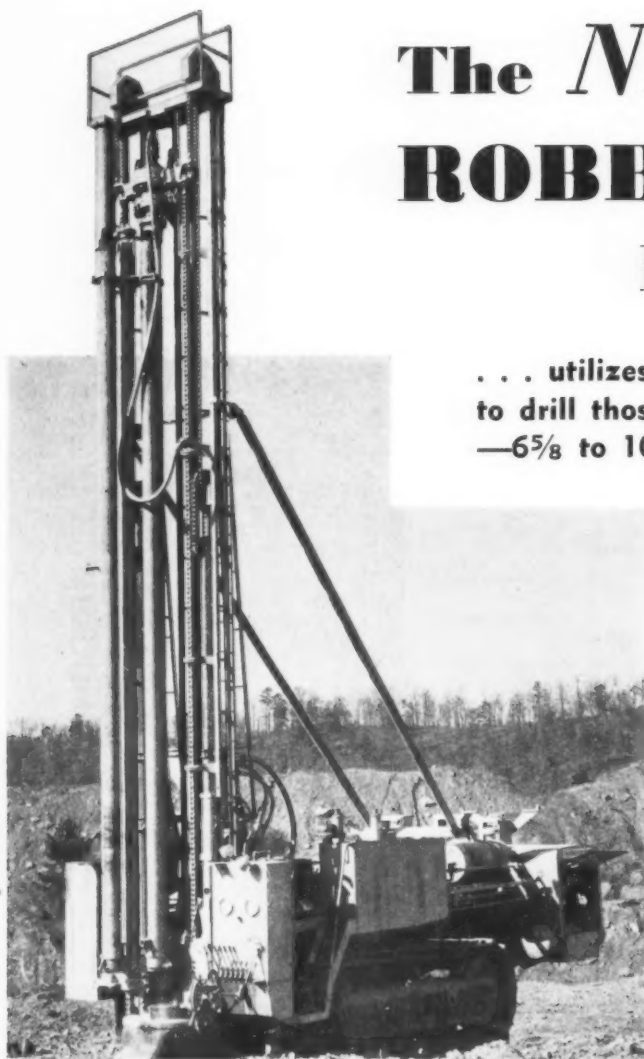
joints spaced 49 feet apart.

All research work on the pavement is being handled by the Testing and Research Division of the Highway Department. But it is kept to a minimum so as not to interfere with the contractor's operations. Strain gages are being installed to determine the stress in the steel, and plugs are being inserted in the pavement to determine movements at cracks and joints. Periodic condition surveys will be made following construction.

Comparative costs

Both the Maryland and Michigan programs will be watched with interest, for their continuous reinforced-concrete paving work may have a tremendous influence on concrete paving in the future. Right now, the cost of this work is high since up to 185 pounds of reinforcing is required per 100 square feet as compared to 73 pounds for conventional paving. Elimination of joint assemblies and joint-setting crews compensates for the high price to a certain degree, and as this type of paving work continues, the price may be forced down to a competitive level—or even lower.

THE END



The *NEW* ROBBINS RR10 Rotary Drill

... utilizes your crawler tractor's power
to drill those big blast holes
—6⅝ to 10⅝ inches in diameter!

Contractors are able to increase their profits with the new Robbins RR10 Rotary Drill by drilling larger holes on wider spacings at faster penetration rates and using low-cost explosives.

Mounted on your Cat D8 or International TD-24 crawler tractor, this brawny money-maker employs a mechanical drive for rotating the drill bit, gets its heavy-duty GO through the tractor's front and rear power take-off. A used tractor makes an ideal unit for mounting the RR10, and mounting can be performed quickly in the field.

CHECK and COMPARE

- ✓ up to 60,000 lbs. down pressure on the bit.
- ✓ three hydraulic jacks level the drill even on a 15 per cent grade.
- ✓ drill mast hinged to the pedestal; two hydraulic cylinders permit quick raising, lowering for short-haul portability.
- ✓ for long-distance transport, entire drill mast and compressor can be easily removed and loaded on a carrier.
- ✓ a 600-cfm rotary compressor mounted on the front of the tractor provides air for the removal of cuttings.
- ✓ rugged, heavy-duty rotary drives provide variable speeds for drilling all types of soft material and hard rock.
- ✓ high-capacity Rotoclon for efficient dust control.
- ✓ truly superior performance—penetration rates in soft material up to 12 fpm; 1½ to 2 fpm in hard blue sandstone.

The Robbins RR10 Rotary Drill, plus your used tractor, adds up to a really rugged piece of equipment that'll take itself into areas practically inaccessible to other machines. Rough terrain poses no problem for this machine and it's made to order for those tight-quarter operations too. The Robbins RR10 Rotary Drill will cut your blast hole costs **any way you turn!**

For complete information write to —

ROBBINS MACHINE & MANUFACTURING CO., INC.

P.O. Box 281

Oneonta, Alabama

For more facts, use Request Card at page 18 and circle No. 337

NLA film shows use of lime in road building

The National Lime Association presents a low-cost method of road-base construction in a new 16-mm sound-color film entitled "Lime Stabilization of Roads". The film demonstrates the use of lime in stabilizing marginal clayey soils on projects ranging from interstate freeways to city streets, airfields, and shoulders. Procedures for both subgrade and base courses are shown. The film also shows how lime changes soil characteristics and expedites construction in wet weather.

Reservations for the 23-minute film may be obtained by writing to the National Lime Association, 925 15th St. N. W., Washington 5, D. C. The film will be shipped express collect, but must be returned at the borrower's expense. Prints may be purchased.

Superintendents' society offers employment service

An employment service, operated by the Society of Construction Superintendents, Inc., is being offered free of charge to contractors, engineers, or any other firm interested in securing the services of a construction superintendent.

Since members of the society vary in background and experience, the employment bureau can pinpoint specific men for specific jobs. The prospective employer is thus able to interview men who have the exact qualifications he desires. There is no charge to either the employer or employee.

Men are available for work in all parts of the country, and interviews can be arranged by writing to the Society of Construction Superintendents, Inc., 1 Beekman St., New York, N. Y.

CONTRACTORS AND ENGINEERS



A semiautomatic welder is shown being lifted from the specially designed truck to a platform above one of the roll crushers. Corrugations spaced 3 inches apart for better biting action were built up with Stoodly 100.

Case history

Portable welding shop cuts crusher downtime

The task of maintaining two portable crushers located over 100 miles from the home shop was solved by a specially designed truck, semi-automatic welding, and Stoodly hard-facing alloys.

The Phoenix Construction Co., of Bakersfield, Calif., was faced with this problem while constructing a new 16½-mile state highway in the High Sierras. The crushing sites were located between Shaver Lake and Huntington Lake, about 130 miles from the company's maintenance yards at Bakersfield.

Daily transportation of welding apparatus and hard-facing rod from the home plant was too costly. The company's answer was a specially designed truck equipped with a portable, mobile welding rig complete with a permanent gas-driven welding machine, a special platform for the semiautomatic welder, a section to hold oxyacetylene tanks, built-in cabinets for storing Stoodly hard-facing wire and other accessories. In addition, the truck driver was the welder, resulting in a one-man welding shop capable of transporting all facilities quickly and easily.

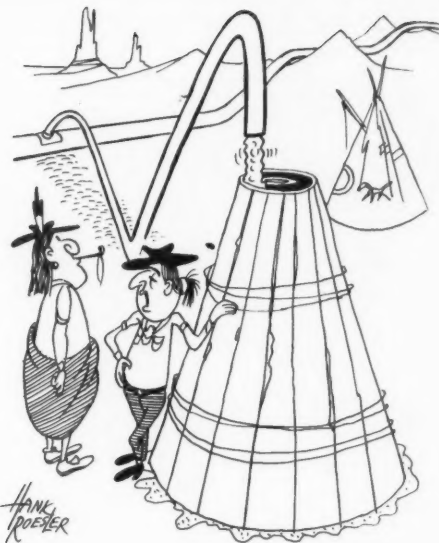
The worn crusher shells were originally rebuilt to contour with Stoodly nickel manganese applied by semi-automatic welding, a process said to increase welding speed by up to five times that of the manual method. Corrugations spaced 3 inches apart for better biting action were built up with Stoodly 100, a high-chrome material with maximum abrasion and impact resistance.

This effective combination kept the two units crushing at 100 tph, with only twice-a-week touch-ups necessary on the corrugations.

For further information about Stoodly hard-facing alloys, write to the Stoodly Co., Dept. C&E, 11936 E. Slauson Ave., Whittier, Calif., or use the Request Card at page 18. Circle No. 81.

About \$21 million worth of work has been programmed under the emergency federal-aid highway program by 14 states, and \$8 million has been okayed by the United States Bureau of Public Roads.

"Palefaces pipe concrete to new dam job—me pour tepee."



8 more jobs prove Foster Pipe Piles

*speed up foundation piling work
cut storage problems
give lower finished cost*

We'll supply all the pipe piles you need . . . right from Foster warehouse stocks . . . of economical spiral-weld pipe (up to ¼" wall) or regular Electric Weld and Seamless Pipe for piling. Pictured are only eight of hundreds of structures using Foster Pipe Pile. These jobs used Foster Spiral-Weld Pipe. Its greater strength, its high bearing load, and its greater ease of handling enabled the contractor to count on lower finished costs. We'll gladly help on your job calling for cast-in-place piles, working with you on specs and types of piling, and delivery schedules that will eliminate inventory and storage problems. On your next job, try us for that fast Foster service.



Walnut St. Bridge, Wilmington, Del.
A. S. Wilkstrom Inc., Skaneateles, N.Y.



Florida Power and Light Co. Plant
Murphy Construction, Palm Beach



New York Thruway Connecting Link
Carlo Bianchi & Co. Inc., Framingham



Jersey City Sewage Treatment Plant
Garden State Constructors & Assoc.



Brazos River Bridge, Hearne, Tex.
J. A. Raines Construction Co., Okla.



Mississippi River Bridge, Lansing, Ia.
Brennan Brothers, LaCrosse, Wis.



Connecticut Turnpike Feeder
C. W. Blakeslee & Sons Inc., New Haven



Illinois State Toll Highway Project
(over 750,000' Spiral-Weld pipe piles)

Just off the presses!
NEW PIPE PILING SOURCE BOOK
Send For Free Copy—Catalog CE-6



IMMEDIATELY AVAILABLE from Foster warehouse and field stocks. Every type of Pipe for Piling; Steel-Sheet Piling; H-Pile; Rail Pile, to schedule the right material for the job at the right time. Also complete stocks of Pipe (thru 36"), Valves & Fittings, Rail.

SERVING THE CONTRACTOR SINCE 1901

L.B. FOSTER co.

PITTSBURGH 30 • NEW YORK 7 • ATLANTA 8 • CHICAGO 4 • HOUSTON 2 • LOS ANGELES 5

For more facts, use Request Card at page 18 and circle No. 338

Now!

MARLOW'S *great new*

LIGHT-WEIGHT "MUD-HOG" DIAPHRAGM PUMPS

Light-weight, aluminum, Briggs & Stratton, 4-cycle engine with recoil starter and valve rotators for true portability and long life.

Heavy-duty, heat-treated gears, running in a bath of oil, operate diaphragm through a crank-type drive.

Anti-friction bearings throughout.

Air chambers on both suction and discharge for smoother operation.

New, all-aluminum construction makes units readily portable.

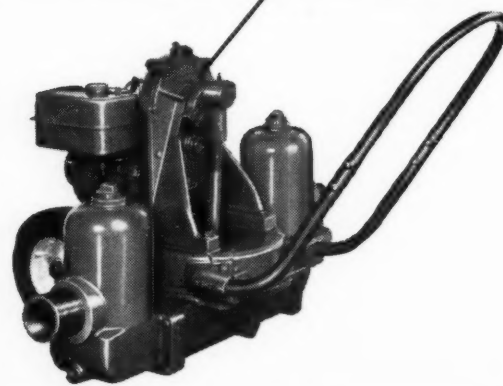
Steel pipe nipples for long thread life.

Heavy-duty, pump valves on both suction and discharge for long service life.

Two carrying handles balance load for easy handling.

Wheel-mounted units can be easily handled by one man.

The new Model 302B light-weight "Mud-Hog" can be arranged either with or without wheels. The wheel-mounted model weighs 137 pounds while the base-mounted unit weighs only 126 pounds. Both units are compact in size. These fast-priming pumps have 3" suction and discharge ports. They can handle trash-laden and muddy water with ease. For complete details, write today for brochure and the name of your Marlow Dealer.



DIVISION OF

BELL & GOSSETT CO.

Midland Park, New Jersey

Longview, Texas • Morton Grove, Illinois

8-129

For more facts, use Request Card at page 18 and circle No. 339



An exceptionally shallow depth-to-span ratio on these 103-foot-long prestressed-concrete bridge beams was obtained by using a 45-inch depth at mid-span, and 48 inches at the end.

Case history

Concrete bridge beams measure 103 feet long

Pretensioned, prestressed Amdek concrete bridge beams measuring 103 feet long—said to be the world's longest for H20-S16 highway loading—were erected recently in Scranton, Pa.

According to American-Marietta, a remarkably shallow depth-to-span ratio was obtained by using a 45-inch depth at mid-span, and 48 inches at the ends. This haunching made possible favorable stress distribution in the ends of the beam without resorting to harping or draping of the tendons.

Erection was accomplished by providing a temporary bent near mid-stream, on which one end of the beam was rested. This was necessary only for the first three beams, two of which had projecting stirrup reinforcement for a cast-in-place sidewalk. The third beam, without reinforcement, provided a resting place for subsequent members.

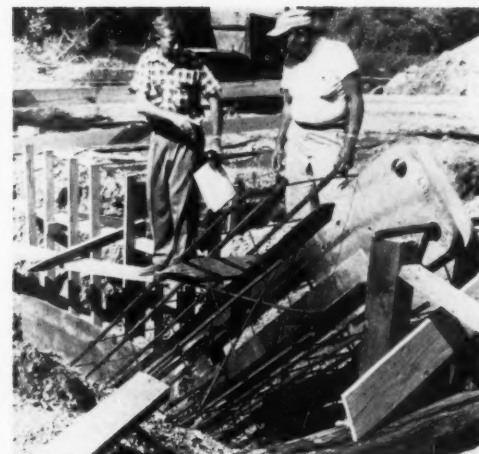
For further information about Amdek pretensioned beams, write to the Concrete Products Division, American-Marietta Co., Dept. C&E, 101 E. Ontario St., Chicago 11, Ill., or use the Request Card at page 18. Circle No. 114.

ICEI 1958 elections

L. F. Shoemaker, Allis-Chalmers Mfg. Co., Milwaukee, Wis., has been elected president of the Internal Combustion Engine Institute at its annual meeting. He succeeds F. C. Langston, Jr., of the P&H Diesel Engine Division, Harnischfeger Corp., who continues as a director. Other 1958 officers are Commander A. D. Marks, Hercules Motors Corp., vice president; H. H. Howard, Caterpillar Tractor Co., treasurer; and James V. Doe, Willys Motors, Inc., secretary.

Goodyear promotes

Edward J. Mackey has been named manager of management engineering for the Goodyear Tire & Rubber Co., Akron, Ohio, succeeding George Sherry, who retired. Mackey will be responsible to the president for special assignments in domestic and international operations.



Case history: The reinforcing bars and anchor plate for the six cable anchorages for KSD-TV's new 1,152-foot television tower in Missouri were shop-fabricated and welded at the Laclede Steel Co. plant. Welded into a single unit, the reinforcing assemblies were delivered to the job site ready for placement in the forms. More than 95 cubic yards of concrete completed the construction of each anchorage. The tower is designed to withstand winds up to 120 mph. For further information write to the Laclede Steel Co., Dept. C&E, Arcade Bldg., St. Louis, Mo., or use the Request Card at page 18. Circle No. 161.



How torque converters assure higher dividends from your major equipment investments

Twin Disc Torque Converters, dependably and efficiently transmitting power to your heavy-duty machinery, assure you a higher return on your equipment investment, through more work done in less time . . . with a minimum of maintenance and costly downtime.

Here are six profitable, proved reasons why Twin Disc Torque Converters help you to earn more from your major equipment investments . . . such as the Allis-Chalmers HD-21 Tractor pictured above.

1. Three-stage design provides the highest engine output torque multiplication available—eliminating harmful, costly engine lugging and stalling.

2. Engines work up in the maximum efficiency range all the time, delivering constant, high-horsepower output . . . doing more work than

units equipped with mechanical drive.

3. Power is matched to load demands automatically with gear shifting minimized or eliminated—where mechanical transmissions usually must stay in the starting gear ratio, even after starting load resistance is reduced . . . operator efficiency is boosted.

4. Heavy load pick-up is smooth, even, without clutch slippage . . . better flotation is obtained.

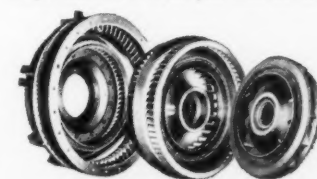
5. Overloads, shock loads and vibrations are cushioned out, through fluid connection . . . providing longer tractor life with less maintenance.

6. Infinite variety of ratios is available to work with, permitting smooth, accurate control of loads.

Be sure to specify a torque converter in your next Allis-Chalmers HD-16! And investigate the advantages of Twin Disc Torque Con-

verters—both single-stage and three-stage—for most other heavy-duty applications from 30 to 1000 hp.

This A-C HD-21 features A-C Torque Converter Drive as standard (incorporating Twin Disc Torque Converter components). And, to get more work done, you can specify this same type torque converter drive on your next new HD-16.



TWIN DISC
Torque Converters

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin (Hydraulic Division), Rockford, Illinois

For more facts, use Request Card at page 18 and circle No. 340



Plastics serve the contractor

The contractor doesn't always fight alone in his battle against rising costs. True, many decisions affecting the economy of his operation are made right on the job, but he can also look to his suppliers to provide equipment and materials that will help cut his costs.

One example of how material sup-

pliers can help the economy-minded contractor is provided by the plastics manufacturers. These companies have brought to the attention of contractors many new forms of plastics adapted to construction needs. In other cases, the manufacturers have developed new plastic materials specifically for use in construction.

In general, plastics are less expensive than other materials, but they are often many times more useful than their comparative cost would indicate. In less than 15 years these new products have developed into not only the least expensive but also the most suitable materials for a variety of construction operations.

Three main types

The Bakelite Co., a division of Union Carbide Corp., manufactures three types of plastics that are currently finding many applications in construction. The three types are polyethylene, vinyl, and epoxy. Each has properties which make it suitable for particular construction operations.

Polyethylene is the plastic most widely used in construction, according to Bakelite engineers. This is the material used in squeeze bottles for cosmetics and in packaging for hardware and toys. In much stronger and more durable form, polyethylene is seeing increasingly wider use as a membrane material in curing concrete, as a vapor barrier to prevent moisture from seeping through foundations, as lining for forms, as protective covering for machinery and materials stored in the open, and for temporary enclosures to protect concrete work and other construction from wind, rain, hail, snow, or freezing temperatures.

In the sense that it remains pliable at ordinary temperatures, polyethylene is a true plastic material. It is not affected by most acids, alkalis, bacteria, or molds. Polyethylene film (less than 1/100 of an inch thick) is entirely flexible and conforms easily to most shapes. Once it is in place, it will not break, tear, puncture, or deteriorate under ordinary conditions. It has a low vapor transmission rate, but permits the passage of oxygen and carbon dioxide.

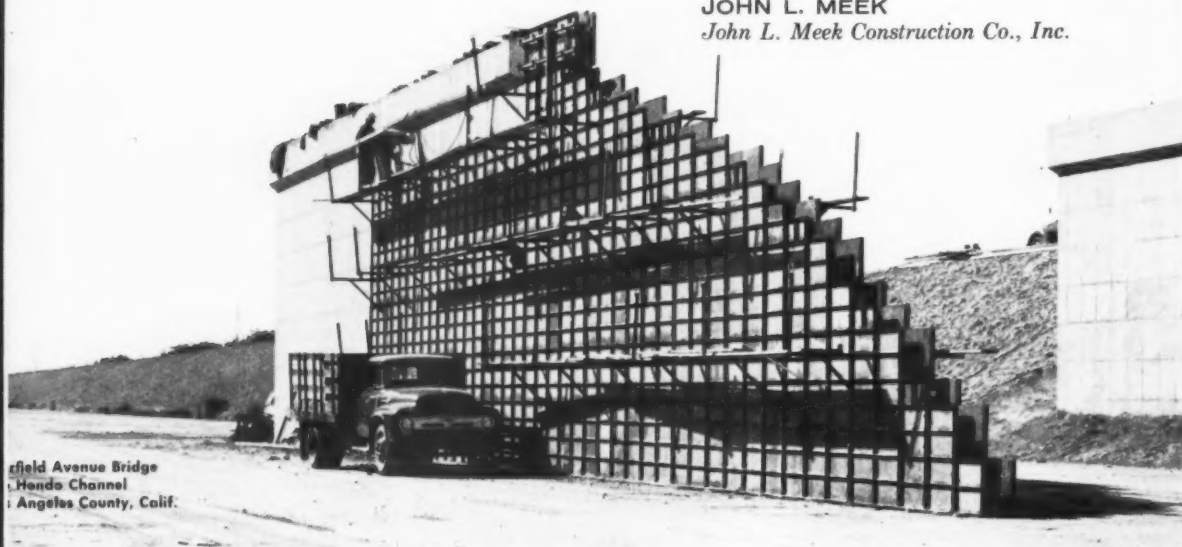
The principal characteristics of polyethylene film remain virtually unchanged from 70 degrees below zero to 160 degrees above. It is light in weight and easy to handle; 1,000 square feet of film .004 inch thick weighs less than 20 pounds. Finally, it is a relatively inexpensive material, ranging from 1½ to 3½ cents a square foot, depending on the thickness and quantity purchased.

Contractors have found that polyethylene film is most useful to them in concrete work. Here are some of the specific jobs it can do, with brief descriptions of how the material should be used in each application.

CONTRACTORS AND ENGINEERS

my men were **UNI-FORM EXPERTS**
an hour after they began using them"

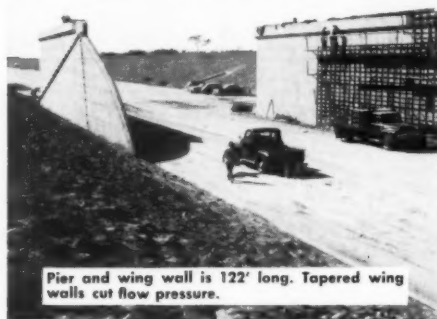
JOHN L. MEEK
John L. Meek Construction Co., Inc.



Field Avenue Bridge
Hondo Channel
Los Angeles County, Calif.

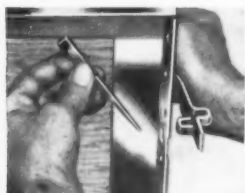
Stripping center of 3 piers. Piers were 26' high, with 40" cap. UNI-FORM Scaffold Brackets attach to steel frame of UNI-FORMS.

men inexperienced crews—men who have never used them before—can become experts in the handling and erection of UNI-FORM Panels in an hour or two, it means big savings in time and labor . . . faster job progress and lower all around costs. Simple mechanical assembly of UNI-FORM Panels permits fewer men to do more contact area per hour than is possible with any other job-erected form-system. The John L. Meek Construction Company's experience with UNI-FORM Panels is typical—quick mastery of the simple UNI-FORMING technique, resulting in faster forming with less labor. A good reason why more concrete is being formed every day with UNI-FORM Panels . . . why more contractors are using the UNI-FORM System for all their forming, regardless of type or size of the job. Write for the UNI-FORM Catalog—illustrates and describes complete UNI-FORM System.

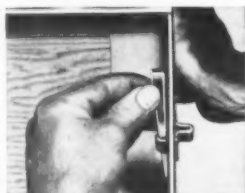


Pier and wing wall is 122' long. Tapered wing walls cut flow pressure.

UNI-FORM ASSEMBLY IS SIMPLE AS THIS:



1. UNI-FORM Tie Loop is placed into the square tie hole of Panel.



2. Tie Key is set into the Tie loop. This locks tie and Panel into 1 unit.



3. Bring next UNI-FORM Panel into position. Insert Tie Key in other Tie loop. Assembly is completed.

UNIVERSAL FORM CLAMP CO.
1238 N. KOSTNER • CHICAGO 51, ILLINOIS

CONCRETE FORM SPECIALISTS SINCE 1912

ANCH OFFICES
WAREHOUSES

SAN LEANDRO, CAL.
2051-9 Williams Street

HOUSTON, TEX.
2314 Preston Ave.

BALTIMORE, MD.
1020 N. Kresson St.

LOS ANGELES, CAL.
13210 S. Figueroa St.

CLEVELAND, OHIO
24901 Lakeland Blvd.

ATLANTA, GEORGIA
1401 Howell Mill Rd., N.W.

Universal Form Clamp Co. of Canada, Ltd., 226 Norseman St., Toronto, Ontario
For more facts, use Request Card at page 18 and circle No. 341

Polyethylene film is finding increasingly wider use as tarpaulin material for enclosing work areas during inclement weather. Here the film, stapled to temporary wooden frames, prevents freezing of interior concrete and plaster on a building in Newark, N. J.

Curing

Polyethylene film is used to hold the moisture in concrete while the concrete is curing, thus producing a stronger end product. The film is placed directly over the concrete as soon as it has set enough to resist surface marring. The surface may be sprinkled lightly with water before it is covered with the film. It is desirable to allow 4 to 6 inches of overlap at the joints. To seal the joints, pressure-sensitive tapes or non-staining mastic may be used, but the most practical method is to weigh down the joints with planks.

In this application, polyethylene film, which comes in widths up to 32 feet, is light enough to permit two men to cover almost any slab area. The film is tough enough to withstand any ordinary roughness in handling. It can be salvaged, rolled up, and stored away for the next job.

Vapor barriers

The film can also be used as a vapor barrier to prevent the passage of water through ordinary building foundations. For slab-on-ground construction, it is best to lay the polyethylene film on a bed of sand. There is some advantage in closing joints with an electric sealer, but taping and stapling provide effectively sealed joints as well. The film should be secured to the side wall of the foundation with asphalt.

When pipes and electrical conduits must pass through the film, they should be wrapped tightly in small sheets of film and sealed with the main barrier. When reinforcing steel is laid over a film barrier, only nominal care is necessary to prevent damage to the film.

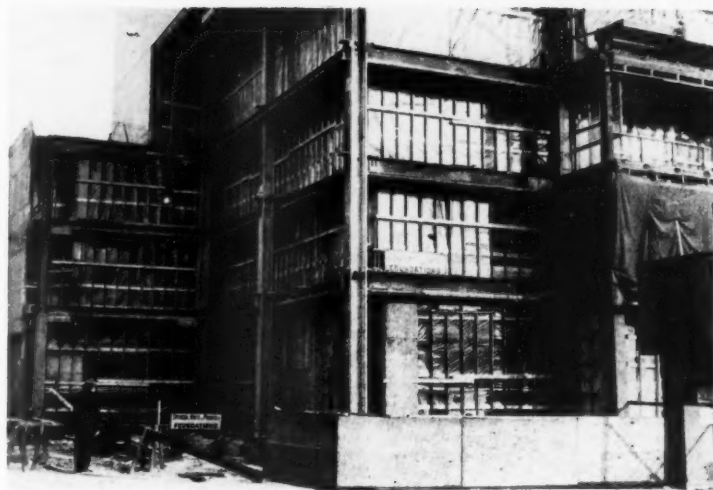
Contractors report that one man can lay at least 1,000 square feet of film in about an hour and a half. The film for this area would cost about \$15.

Form lining

One of the newer developments in

the concrete-forming field is the lining of forms with strong paper and tape coated with polyethylene. This technique yields fin-free concrete, smooth enough to paint without special preparation. When the form is stripped, the lining material adheres to the concrete and may be left in place as long as desired to extend the curing time.

(Continued on next page)



**"These S-12's are just right for my jobs
on secondary and two-lane work."**

SAYS CONTRACTOR FREEMAN HUNTLEY OF ROCK SPRINGS, WYOMING

• On a farm-to-market road job . . .

With hauls of 2200' maximum and 950' average, Huntley's three S-12 "Eucs" put 64,000 bank yards in place in only 10 working days on a two shift basis—a total of 17 hours per day. Each Euclid averaged 125 yds. per hour during this period.

Pat Burns, the General Superintendent for Huntley Construction Company, reports "On this job with all of the wet irrigation ditches and borrow pits to pull through, I have never seen a machine that will pull through and compare under these conditions with the S-12".

It takes outstanding performance to prompt such praise for a piece of equipment, but contractors on all kinds of jobs have found that they can get more work done at lower cost with the Model S-12 Euclid Scraper. It gets around like a 7-yard rig and with 218 h.p. and 17 yd. heaped capacity it piles up the yardage.

Why not get an S-12 production-cost estimate from your Euclid dealer and compare it with the figures on your present scrapers? It won't cost you a penny and may show a way to improve your profit picture—one of the reasons why **Euclids are your best investment.**

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio



EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

Leakage of moisture through concrete block foundations is controlled with polyethylene film, installed as a moisture barrier after the outer surface of the foundation is coated with tar.

For more facts, circle No. 342 →



The contractor on the Dallas-Fort Worth Turnpike job used sheets of polyethylene film to cure concrete slabs. The film is quickly unrolled over the slab, and can be re-used many times.

(Continued from preceding page)

Tilt-up construction

Polyethylene film is proving well adapted to curing tilt-up wall panels. It has an additional interesting application in this field as a bond breaker between the wall panel and the base slab on which it is cast.

The procedure is simple. The base slab is first swept thoroughly and flooded with water to enable the film to adhere closely. The film is put in place, and wrinkles are worked out with an ordinary push broom. Tilt-up panels, after curing, are then separated from the base slab by lifting them into place. Slabs break loose quickly, easily, and safely, and have exceptionally smooth, architectural finishes on the "down" surface.

Forming

Probably the newest and most revolutionary application for polyethylene film in concrete construction is its use in place of conventional forms in roof pouring. The film is laid over a network of $\frac{3}{8}$ -inch reinforcing rods which are supported by I-beams. The rods are spaced about 6 inches apart in both directions, and are tied together to form a mesh. Film about $\frac{1}{16}$ inch thick is placed directly over the rods, and the film is then covered with standard wire mesh. Temporary shoring helps support the network of steel rods until the concrete has been poured and has set.

In one application, this technique was used in forming a 72x24-foot roof, with structural steel members spaced 8 feet on centers to support the reinforcing rods.

Vinyl is another plastic material proving useful to contractors. It is available as Bakelite's Krene vinyl film, as thicker vinyl sheeting, as extruded ribbons, and in vinyl resin paints. The basic material provides strength and resistance to chemicals,



Ridged ribbons of vinyl plastic are sealed into joints between concrete sections to prevent leakage. These waterstops are extremely durable, and will expand and contract with the joints to form a permanent seal.

water, and abrasion in all the forms in which it is used.

Tarpaulins

Lightweight tarpaulins made of Krene vinyl film, for example, resist mold and mildew, and can be folded and stored without danger of rotting and decomposition. In use the plastic tarpaulins resist staining by grease and oil, and will not support combustion. Dirt and grime can be wiped off with a damp cloth, and if the tarpaulin is punctured it can be easily repaired with an adhesive or plastic patch. These are used in the same way as regular tarpaulins.

Waterstops

The same vinyl, in a different form, also helps contractors prevent water leakage in concrete structures. As waterstops, ribbons of vinyl plastic are sealed into joints between concrete sections. They are expected to outlast the structures.

Exterior coatings

Plastic coatings for structures used in contracting work and for equipment subject to weather and hard use are a help to the contractor seeking to pare maintenance costs. These coatings include sprays and paints based on both vinyl and epoxy plas-



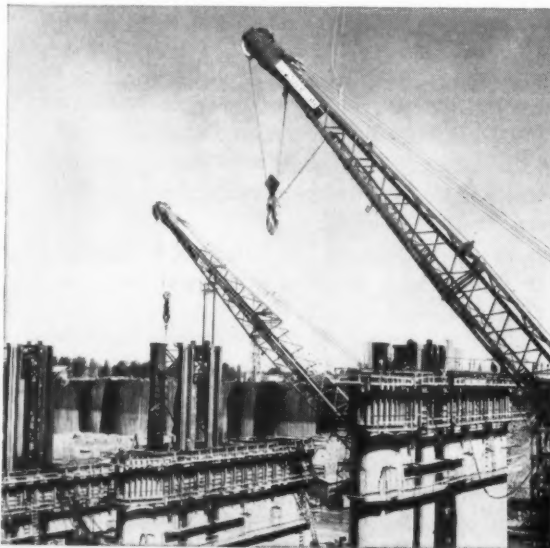
1 MR. WIRE ROPE—Ed Carey (right), Tiger Brand Wire Rope sales representative, is known as "Mr. Wire Rope" on the St. Lawrence Seaway & Power Projects. Ed is checking sheave grooves on a walking dragline with Mr. Mel Poeschl, Equipment Superintendent for Waddington Constructors, combine composed of Kiewit, Morrison-Knudsen.



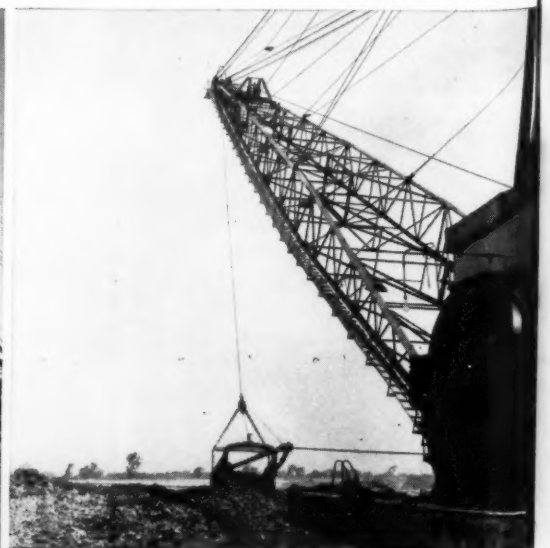
2 GRASSE RIVER LOCK, St. Lawrence Seaway. Gantry cranes rigged with $\frac{7}{8}$ " 6x19 Tiger Brand Hoist Ropes are pouring a total of 376,000 cu. yds. of concrete. This lock is one of two which will provide for raising and lowering vessels to and from the lake created by the Barnhart power dam and the Long Sault spillway dam. General Contractors: Joint venture between Perini, Walsh, Kiewit, Morrison-Knudsen and Utah.

Tiger Brand Wire Rope makes things hum

5 IROQUOIS DAM, New York State Power Project. Located 25 miles upstream from Long Sault Dam. This dam is to control and regulate the outflow from Lake Ontario. Cranes are equipped with $\frac{1}{4}$ " 18x7 Tiger Brand Non-rotating Hoist Rope. General Contractors: Joint venture between Kiewit, Johnson, Johnson.



6 LONG SAULT CANAL, mainland portion, St. Lawrence Seaway. Monaghan dragline with 13-cu.-yd. bucket equipped throughout with Tiger Brand Wire Rope. The drag rope is $2\frac{1}{4}$ " 6x19 Excellent Monitor Lang Lay IWRC. This job involves digging 12,000,000 cu. yds. of heavy marine clay and cemented glacial till, two of the most tricky and unpredictable materials you can find. General Contractors: Joint venture between Kiewit, Morrison-Knudsen.



tics. They are easily applied, and effective in reducing rust and rot.

Among these are the "cocoon" spray-on coatings of vinyl plastic that are recommended for equipment in storage. By covering essential parts of the equipment with a "cocoon", the contractor can store machinery outside even in severe weather.

Epoxy coatings for the construction field are still in fairly experimental stages. Plastics manufacturers report, however, that their research laboratories are coming up with applications which will permit cost-cutting techniques both in construction operations and in maintenance. THE END

Case history

Hydraulic pipeline dredge reclaims Florida swamp

Low-cost reclamation of nearly 1,000 acres of Florida mangrove swampland is being effected through use of an Ellicott hydraulic pipeline dredge.

Owned by the contracting firm of Mulbry, Inc., the unit, a 10-inch portable Dragon model, is at work on the Venezia development at New Smyrna Beach, Fla. Its job is to take fill from underwater areas on the property, transport it by pipeline,

The Ellicott 10-inch hydraulic pipeline dredge is shown at work near New Smyrna Beach, Fla. Ultimately, this operation will involve about seven million cubic yards of dredging.



and relocate the solids in the most desirable lowland areas. A special blade on the intake side of the cen-

trifugal suction pump cuts and grinds up the mangrove roots with no halt in the operation.

The dredge is powered by a 320-hp diesel engine, and has a maximum output of 340 cubic yards of water-bound solids per hour. It can pump these materials through pipelines to distances up to 3,000 feet.

For further information about this hydraulic pipeline dredge, write to the Ellicott Machine Corp., Dept. C&E, 1611 Bush St., Baltimore, Md., or use the Request Card at page 18. Circle No. 172.

Case history

Steel form for walls proves a time-saver

A new type of steel form, being used for the first time on the Greenup (Kentucky) Locks on the Ohio River, is cutting form-handling time and producing a better finished product, according to the Guy F. Atkinson Co. and United Construction Co., joint contractors on the job.

The form, designed by Blaw-Knox, is used to hold horizontal lock wall

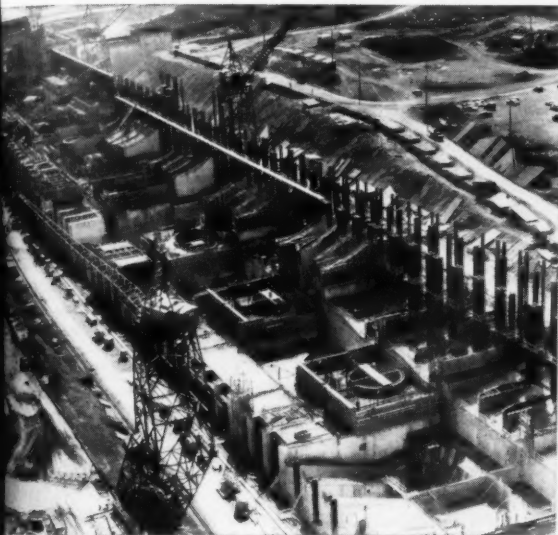


This close-up shot of a section of lock wall shows the armor installed around a floating mooring bitt. The armor consists of modified T-sections with 7 3/4-inch-wide face, elevated 1/2 inch from the concrete.

armor in place while it is integrally cast with the walls. It is said to accommodate 5-foot lifts.

To put the armor into place, three sliding horizontal panels of the correct height are incorporated in each 5-foot panel. The panels can be slid within the face of the form to accommodate any armor arrangement. On the Greenup job the contractor is installing sections of armor which are from 18 inches to 55 feet long.

For further information on this all-steel wall-type form, write to the Blaw-Knox Co., Dept. C&E, 300 Sixth Ave., Pittsburgh 22, Pa., or use the Request Card at page 18. Circle No. 162.

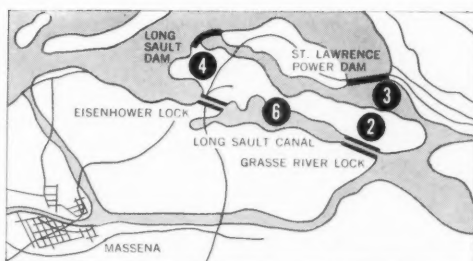
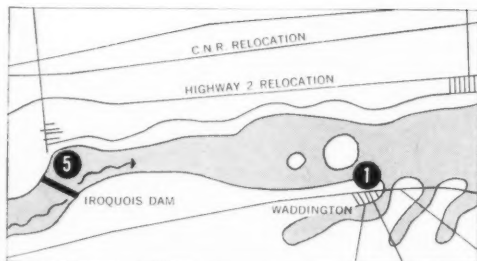


3 ST. LAWRENCE POWER DAM, New York State Power Project. Photo shows U. S. Section. Combined Canadian and American power houses will produce 1,880,000 kilowatts, half to each nation. Whirly cranes erecting forms and pouring concrete are rigged with Tiger Brand 7/8" 6x19 Hoist Rope Excellay Monitor IWRC. General Contractors: Joint venture between Perini, Walsh, Morrison-Knudsen, Kiewit, Utah.



4 LONG SAULT SPILLWAY DAM, FIRST SECTION, New York State Power Project. This dam controls the flow of water into the power pool and thence to the power dam. At present all of the St. Lawrence flows through this section. General Contractors: Joint venture between Walsh, Perini, Morrison-Knudsen, Kiewit, Utah.

on St. Lawrence Seaway and Power Projects



This is the big year on the St. Lawrence Seaway and Power Projects. Contractors are rushing to complete their jobs on time. Everywhere you look, big shovels and draglines are digging 24 hours a day. Huge gantry cranes are setting forms and pouring concrete. The St. Lawrence River has been moved so many times it doesn't know its own bed.

All this adds up to a situation that demands the most from machines and wire rope... and most of the wire rope on the American jobs is Tiger Brand.

Contractors wanted quality wire rope in a hurry. So, American Steel & Wire set up a warehouse in nearby Massena. They staffed it with competent men who brought in a complete stock of Tiger Brand Wire Rope in all types and sizes. Thus, the best rope obtainable could be delivered to the job sites in a matter of hours. The illustrations show a few of the locations where Tiger Brand Wire Rope is hard at work. American Steel & Wire, Rockefeller Building, Cleveland 13, Ohio.

USS and Tiger Brand are trademarks

American Steel & Wire
Division of



United States Steel

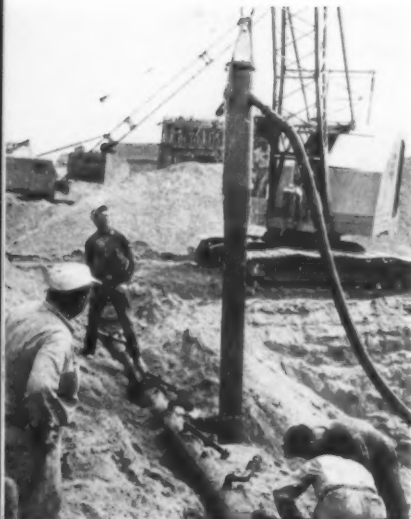
Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors - Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors - United States Steel Export Company, Distributors Abroad
For more facts, use Request Card at page 18 and circle No. 343



Wellpoint system used to build piers in dry

Ramp is built out from bank for equipment to use during job; wellpoints, circling twin piers, drop water table about 13 feet

by **BILL ALLEN**
field editor



The pipe casing is held by the crane as a Jaeger 4-inch jet pump forces water through the hose and into the tapered pipe to bore out a hole for the wellpoint.

When river piers have to be built, contractors generally turn their attention to construction of sheet-pile cofferdams so that work can be done in the dry. But taking all factors into consideration, one firm used a good wellpoint system to speed foundation work on a 7-span bridge on Interstate Highway 60 near Des Moines, Iowa.

Schmidt Construction Co., Winfield, Iowa, is one of many contractors on about 30 miles of relocated U. S. 69, a four-lane divided highway with numerous grade separations and interchanges for complete control of access. It follows a general north-south direction, bisecting the state, and cuts through rolling farm land ten miles south and west of Des Moines.

Two contracts totaling \$1.3 million give Schmidt a share of the bridge

work on the new highway. The firm is responsible for building five 2-lane bridges over the highway and two twin bridges carrying the four lanes of the new freeway.

The twin bridge over the Raccoon River is a 7-span bridge with reinforced-concrete piers set in pairs, one for each roadway. The piers, all placed in the sandy river bottom, are founded on timber piles driven to shale. Welded steel girders support the reinforced-concrete deck over spans varying from 64 to 125 feet in length.

Soil suitable for wellpointing

Since the normal flow of the river is confined to a small channel in the wide river bottom, it was an easy matter to build a ramp out from the bank for equipment to use during the

work. Excavation for the footings was a problem, however, since the water table was practically at the surface.

The contractor decided that conditions were particularly suitable for wellpointing, since test borings showed the material to be a sandy gravel that should drain easily. The superintendent had a hunch that by circling pier No. 2 with wellpoints, he could pull the ground water out from the adjacent piers. His hunch was right. The twin piers were enclosed by a 50 x 160-foot rectangle, with the long sides about equidistant between adjacent piers.

The Stang wellpoint system used an 8-inch header line with 21-foot-deep wellpoints on centers of about three feet. Two Stang 10-inch pumps driven by Hercules engines pulled



An 8-inch pipe, narrowing to 4 inches, is moved by an American 399 crane to jet wellpoints so that piers for an Iowa bridge can be built in the dry. Water is forced into the pipe through the hose at the top.



One of the crew members gets a free shower when the jet hits a tough spot and backs up around the outside of the pipe. This was a wet job, but the work went fast and pier erection was kept on schedule.



The casing has been jetted down and the wellpoint is being slipped inside the pipe. When this is done, the crane will pull up the casing, leaving the wellpoint in the hole to be coupled to the header line.



Pours are handled by a P&H 255 ALC crane, which is swinging an Insley 1 1/4-yard laydown bucket from the Chevrolet 2-ton truck to the top of the forms. In the foreground is a Stang 10-inch pump for the wellpoint system.



Superintendent Harold Gibbs checks the oil in the Hercules engine that drives the Stang 10-inch pump. Twin piers are enclosed by a loop of wellpoints, and two of these pumps normally pumped at 1,600 gpm from the loop.

1,600 gpm to drop the water table about 13 feet. The pumps were kept running night and day while the excavation for three twin footings was made in the dry. A similar plan was followed for two of the remaining twin footings. The last twin footing was surrounded, since it was located in the center of the old stream bed.

Wellpoints jettied into ground

Jetting the 21-foot wellpoints into the ground was often a wet job, but it moved along fast. Water under pressure was forced through a tapered pipe casing handled by an American 399 crane. The pipe, held vertical by the crane, sank into the ground as high-pressure water bored out a hole in the sand. The water was pumped by a Jaeger 4-inch jet pump through a flexible hose connected to the top of the pipe.

When the pipe casing had been jettied to the desired depth, its cap was removed and the wellpoint dropped into the pipe. After the crane pulled up the pipe, the wellpoint was coupled to the header line.

Concrete work moves swiftly

After the piles had been driven and the block footing built, work on the 27-foot-high pier proceeded at a good rate. Each pier, supporting one of the two roadways, contained two columns with their outer sides rounded in a semicircle. These round-nosed columns, which were on a 1/2-inch to 12-inch batter, were joined with a 15-inch web.

Working with a crew of about 16 men, the contractor was able to put up the wooden forms of a pier in 6 hours and, next day, pour the 90 yards of concrete in about the same time. The good production was maintained with the help of a small but efficient concrete plant.

Set up on the south bank of the river, the plant contained a group of four Johnson bins that were mounted low enough to be stocked by a Case front-end loader. The aggregate and sand passed through the bins to a small weigh bucket on rails. This carried the batch to the skip of a Jaeger 16S 4-sack mixer. Sacks of Penn-Dixie cement were broken into the skip by hand. Since the mixer

(Continued on next page)

A small batch plant supplies the job with concrete. A Case 1/4-yard loader, right, feeds the Johnson bins. Material goes to a weigh hopper that rides rails to the Jaeger mixer. Sacks of cement are broken into the mixer by hand. Water is supplied by elevated tanks, left. Batches are chuted to buckets on the truck.



ATLAS[®] MORTAR
IMPROVES MASONRY

PROJECT: St. Basil's Roman Catholic Church,
Utica, N. Y.
ARCHITECT: Stanley Pennoch, Utica, N. Y.
MASONRY CONTRACTOR: Ramon P. Pacini, Utica, N. Y.

"... holds its temper ... extra-smooth and easy to work,"

says Alfred Heiland, Masonry Foreman

- To produce serviceable masonry walls, the mortar mix must be plastic — and retain its mixing water.
- Masons on the job consistently confirm that mixes made with ATLAS MORTAR cement strongly resist the suction of porous masonry units. This water-retention increases bond strength.
- Quality-controlled manufacture of ATLAS MORTAR masonry cement maintains high product standards, assuring uniform performance and appearance on every project. (Complies with ASTM and Federal Specifications.)

Write for your copy of "Build Better Masonry,"
Universal Atlas, 100 Park Avenue, New York 17, N. Y.

**UNIVERSAL
ATLAS
CEMENTS**



UNIVERSAL ATLAS CEMENT COMPANY—member of the industrial family that serves the nation—UNITED STATES STEEL
OFFICES: Albany • Birmingham • Boston • Chicago • Dayton • Kansas City • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh • St. Louis • Waco



A tremie pour is made for a pier. Forming took 6 hours, and the 90-yard pour took 6 hours. Forms are of 3/4-inch plywood, with 2 x 6 studs vertical on 1-foot centers. Double 3 x 6 walers are held by Superior tie rods.



A workman wheels the generator for the vibrators into place for consolidation work on one of the piers. The generator is rated at 1 1/2 kw at 115 volts.

(Continued from preceding page)

was on an embankment, concrete could be chuted to buckets carried on trucks driving in at a lower level. Water for the concrete was pumped from the river to elevated tanks.

Concrete was placed by a P&H 255 ALC crane, which swung an Insley 1 1/4-yard laydown bucket from the truck to the top of the pier forms. Three tremies were used in the pour, which was consolidated by two Master vibrators. The forms were stripped after 24 hours and the fresh concrete sprayed with Carter-Waters Hunt Clear Cure.

Formwork

Forms for the 27-foot-high piers consisted of 3/4-inch plywood backed by vertical 2x6 studs on 1-foot centers. Superior 3/4-inch tie rods, pulling against double 3x6 wales, penetrated the forms. The rounded outside walls of the two columns were formed with 1/4-inch plywood backed by vertical 1x2's. Horizontal 2x8's fitted the shape of the semicircle. These were backed by vertical wales, which were hugged in by cables surrounding the pier.

Pile driving

The six piers of the bridge rested on a total of 9,920 feet of untreated timber piling, and the abutments were supported by 2,700 feet of treated piling. On the piers, the piles were driven to refusal in shale, which was about 20 feet below the surface. An American 399 crane handled 30-foot swinging leads with a 3,200-pound drop hammer to drive the piles. The outer piles under the piers were driven on a 1 to 4 batter while the inside row was held vertical. Jetting, to assist the drop hammer, was not allowed.

Personnel

The project manager for Schmidt Construction Co. is George M. Paulson and the job superintendent, Harold Gibbs. For the highway department, Fred Brockman is resident engineer. His assistant is Robert Pratt, and the chief inspector is Ralph Broadstone.

THE END

Bid prices for federal-aid highway construction decreased 2 per cent in the first quarter of this year as compared with the preceding quarter.

CONTRACTORS AND ENGINEERS

The All NEW

Clipper

"SALES RIGHT THRU"

36 H.P. SELF-PROPELLED CONCRETE SAW

MODEL C-362
36 H.P.
Other Models
Gasoline or Electric
Priced from \$395

- DUAL BALANCE DESIGN
- POWERFUL HEAVY-DUTY TRANSMISSION
- POSITIVE BALL BEARING SCREW FEED
- 6 STEEL-CABLE-REINFORCED V-BELTS

USE THIS HIGH PRODUCTION CONCRETE SAW FOR FASTER CUTTING WITH LONGER BLADE LIFE

OVER 36 OUTSTANDING FEATURES FOUND ON NO OTHER SAW!

DUAL BALANCE DESIGN—Precision weight distribution for ① Easy Maneuverability . . . one man lifts-up, lines-up, then saws, ② Constant adequate weight over the blade during cutting. Only Clipper has it!

POWERFUL HEAVY DUTY TRANSMISSION—Exclusive Abrasive Coated Drive Wheels transmit power to rear wheels for continuous forward thrust.

POSITIVE BALL BEARING SCREW FEED—Assures accurate cutting depth control. A MUST for abrasive blades.

6 STEEL-CABLE-REINFORCED V-BELTS—Delivers full 100% power to the blade for best economy and performance.

RUGGEDLY BUILT TO GIVE YEARS OF TROUBLE FREE SAWING!

FREE DEMONSTRATION

THERE'S A CLIPPER BLADE FOR ALL SAWS—ANY AGGREGATE—EVERY JOB!

Call Your Clipper Factory Trained Representative
Collect for Immediate Shipment or Demonstration

THE CLIPPER MANUFACTURING COMPANY

Phone Vctor 2-3113 • 2800 WARWICK • KANSAS CITY 8, MO.

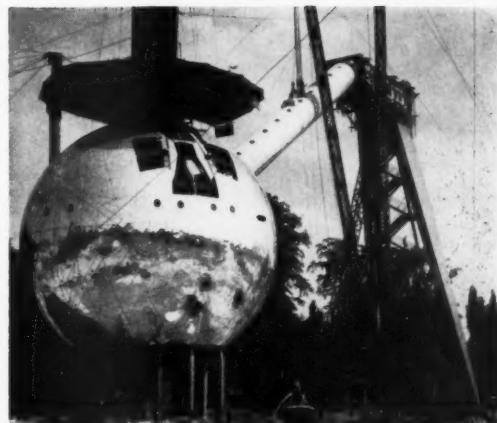
432X Offices in Principal Cities Coast to Coast; Factories in England, France, Germany, Italy

Mr. Clipper

For more facts, use Request Card at page 18 and circle No. 345



The Atomium, a steel structure representing an iron molecule with its nine atoms, is the focal point of the Brussels World's Fair. Of welded construction, it has spheres or "atoms" covered with an aluminum skin, and connected by escalator tubes.



Flexibility in welding highlighted by "Atomium" at Brussels World's Fair

An excellent example of the flexibility permitted in welded design is on view at the Brussels World's Fair. The unique structure, Belgium's "Atomium", represents a cubical molecule of iron with its nine atoms—magnified 150 billion times—connected by 10-foot-diameter cylindrical tubes. The atoms are arranged in the form of a cube that rests on one corner.

Eight of the atoms, or spheres, are at the corners of the cube; the ninth is in the center. The spheres, which house Belgium's exhibits, each measure 59 feet in diameter and have steel frameworks covered with an aluminum skin. Small holes around the skin are for lights that blink in sequence to give the appearance of electrons circling the mass of the atomlike sphere.

Atomium design

The base sphere of the Atomium is the entrance of the entire structure. A cylindrical tube runs vertically out of the top of this base sphere through the center sphere to the top sphere. This tube houses a passenger-carrying elevator. The other tubes are all inclined, and have escalators that run from one sphere to another. Visitors exit via the elevator or the stairways in the bipod supports under the external spheres.

Both the spheres and the cylindrical tubes are of welded fabrication. Sections of the cylinders were welded in a Belgian fabricating shop. A jig was used inside each section to clamp all the stiffeners in place for welding. An external jig at the end of each section held the shell in its proper cylindrical shape.

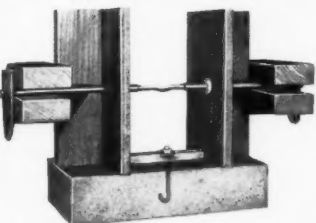
The frame of each sphere is of steel, cut and formed to provide architectural appeal and structural soundness. Curved, fabricated box-section beams form the main members of the spheres. Curved standard structural shapes interlace the welded beams and provide the means for fastening the aluminum skin.

Three separate bipod frames support the external spheres. The legs of the frames are large fabricated channels that taper in width from top to bottom. During erection, a temporary support held each bipod in place until it was tied to the connecting tube that radiates from the base sphere.

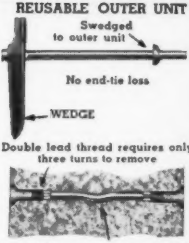
THE END



"LITTLE GIANT" TIE
NAIL-LESS FORMS
MEANS MORE COMPLETE SALVAGE
OF YOUR LUMBER ON
FACE PANEL CONSTRUCTION ...

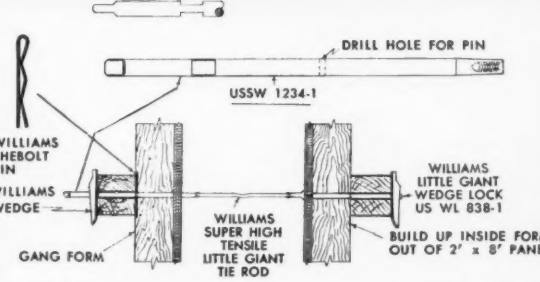


FORM ALIGNER HOOK-BOLT NUT AND WASHER ASSEMBLY

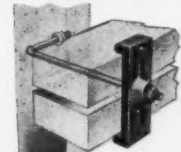


REUSABLE OUTER UNIT
Swedged to outer unit
No end-tie loss
WEDGE
Double lead thread requires only three turns to remove
Watertight — inner unit crimped to prevent turning and breaking of bond during removal of outer units, and assuring watertight walls.






DRILL HOLE FOR PIN
USSW 1234-1
WILLIAMS SHEBOLT PIN
WILLIAMS WEDGE
GANG FORM
WILLIAMS SUPER HIGH TENSILE LITTLE GIANT TIE ROD
WILLIAMS LITTLE GIANT WEDGE LOCK US WL 838-1
BUILD UP INSIDE FORM OUT OF 2' x 8" PANELS
WILLIAMS EXTERNAL AND INTERNAL WALL SPACING USING LITTLE GIANT WEDGE LOCK



L-RODS FOR CLAMPING WALERS TO STUDS FOR 3/4" RODS





... EFFICIENCY AND ECONOMY

WITH WILLIAMS "LITTLE GIANT" IN THE CONSTRUCTION OF THE WORLD'S TALLEST PRESTRESSED CONCRETE BUILDING IN CARACAS, VENEZUELA.

THE STRUCTURE IS 53 STORIES AND WILL HAVE 32 ELEVATORS; PARKING GARAGE FOR 3,200 VEHICLES; 4,000 PERSON AUDITORIUM; 3 THEATERS; A HOTEL PLUS A RESTAURANT FOR 500 PEOPLE AND VARIOUS SHOPS.



WILLIAMS FORM ENGINEERING CORP.

MAIN OFFICE — Madison and Garden Sts.
GRAND RAPIDS 7, MICHIGAN

WESTERN OFFICE — 751 N. E. Lombard St.
PORTLAND 11, OREGON

PIONEER MFRS. OF CONCRETE FORM HARDWARE

Copyright — Wms Form Engr. Corp.

For more facts, use Request Card at page 18 and circle No. 346



Teaming up on a job that is ordinarily handled by a power shovel, a Caterpillar D9 tractor-dozer and a Michigan 175A tractor shovel load broken rock from the cut. The tractor-dozer works the rock out to the stockpile, and the Michigan relays it to White trucks with 10-yard dump boxes.



Dozer and tractor shovel handle highway rock cut

A contractor who did not stick to conventional methods on a rock excavation job is W. J. Henson, Prescott, Ariz. This firm teamed a Caterpillar D9 tractor-dozer and a Michigan 175A rubber-tire tractor shovel to load 60,000 cubic yards of hard rock from a big cut on a U. S. 66 bridge approach at Williams, Ariz. The two rigs handled the rough blasted rock with the speed and ease of a power shovel, keeping four White 10-yard trucks busy on the short haul to the embankment.

The tractor shovel could not economically load the rock directly from the cut, but it loaded the material very readily from a stockpile. The D9 seemed to have no difficulty breaking loose chunks of rock in the cut and bringing them up the stockpile to the loader.

On the same job, a spread of scrapers brought volcanic cinder material from a pit high on a nearby mountainside. The cinders were mixed with the rock to build the embankment, and they were also crushed and used for base materials.

This \$377,628 Arizona State Highway Department contract covered approaches for the overpass spanning the Santa Fe Railway at the east edge of Williams. The 225-foot-long bridge, built under a separate contract by Kitchell-Phillips Contractors, Inc., Phoenix, is actually a box culvert with an inside section large enough for the double-track railroad. Both contracts provide a new alignment for the highway entering Williams and eliminate an old narrow underpass and two sharp curves.

Approaching from the east, the new alignment climbs a fill onto the bridge. Across the railroad, the road cuts into the side of a hill, where some 60,000 cubic yards of rock had to be cut in depths ranging from 0 to as much as 57 feet. This was a big hard-rock cut.

After timber was cleared from the right-of-way, the overburden was stripped by Caterpillar D8 tractors and scrapers. A drilling crew then moved in with two Worthington wagon drills powered by an Ingersoll-Rand 600-cfm Gyro-Flo compressor. The 2 3/4-inch blast holes were drilled on a 6-foot gridiron pattern in lifts up to 24 feet deep. The holes were loaded with Apache 40 per cent dynamite.

After a shot, the D9 dozed the rock



First transistor-powered mobile radios thermostatically protected

General Electric's Progress Line mobile radios now offer transistor advantages in all bands.

New transistorized power supply for both transmitters and receivers means no vibrators to replace, no rotating or vibrating parts to wear out. Transistors, plus high quality silicon rectifiers, give you the most dependable mobile communication known today.

Progress Line mobile radios with transistorized power supplies are available in *all* communication bands: 30 to 100 watts in low band (25-54 mc), 25 or 50 watts in high band (144-174 mc), or 15 watts in UHF band (450-470 mc).

OPERATE FROM EITHER BATTERY POLARITY—Only General Electric's Progress Line lets you operate on either positively or negatively grounded 12 volt batteries. This is especially important in fleet operations.

IMPROVED RANGE—Vibrator hash usually associated with receivers is totally eliminated by the use of transistors. The result is maximum receiver sensitivity.

NOT DAMAGED BY VOLTAGE VARIATIONS—Unlike vibrators, transistorized power supplies can withstand battery voltage variations from +20 to -50 percent.

PROGRESS WITHOUT OBSOLESCENCE—No need to buy new power cable or control head. General Electric Progress Line mobile units with either new transistorized power supply or regular vibrator power supply are *completely interchangeable*.

Call your G-E communications consultant for full details. He's listed under "Radio Communication Equipment" in the Yellow Pages. Or write General Electric Company, Communication Products Department, Section 368, Syracuse, N. Y.



Progress Is Our Most Important Product
GENERAL ELECTRIC

For more facts, use Request Card at page 18 and circle No. 347

CONTRACTORS AND ENGINEERS



The Michigan keeps pace with the tractor-dozers so that the stockpile remains at about this size. The loader, with a 2 1/4-yard bucket, kept four big White trucks busy on the haul of half a mile.

Drilling through the hard rock is handled by Worthington wagon drills powered by an Ingersoll-Rand 600-cfm Gyro-Flo compressor. The 60,000-yard cut, on one side of the overpass at Williams, Ariz., was made in depths of from 0 to 57 feet.



into a convenient stockpile, keeping the Michigan loader and the trucks always working on firm, smooth footing. The four big White trucks maintained a continuous cycle to the dump. The haul averaged about half a mile, and trucks seldom waited more than a few seconds to move into loading position.

The material was hauled across the new bridge to the approach fill on the opposite side. Here, it was spread by a Caterpillar D8 dozer and mixed with the cinders, which were being hauled in at the same time by another spread of equipment. The lifts of the fill were watered by a 2,500-gallon water truck and compacted by a LeTourneau-Westinghouse Model 120 sheepsfoot roller pulled by a Caterpillar D8 tractor. Two Caterpillar No. 12 motor graders kept the fill surface smooth and maintained the haul roads.

Cinders from mountainside

A borrow pit in a formation of volcanic cinders high on a nearby mountainside was the source of material for base and surface courses. Some 90,000 cubic yards of material was hauled more than a mile over a steep, crooked haul road to the job. The remainder of the 150,000 cubic yards of borrow came from two other pits near the job.

Since the strippings from the cinder pit made ideal fill material to mix with the rock, the contractor built the haul road to this material early in the work. The road, pioneered by tractor-dozers, wound up the wooded slope at a maximum grade of 20 per cent, about the maximum economical grade for the empty scrapers.

The spread of six Euclid scrapers then began stripping the area and surfacing the haul road with cinders. But 30 inches of early spring snow kept the road soft and treacherous for about three months. Even after that, one of the No. 12 motor graders stayed busy, keeping the road in shape and removing large pieces of material which fell from the scrapers.

The volcanic cinders are a lava formation, nearly black in color and resembling blast furnace slag in texture and hardness. The material in the pit was thoroughly scarified by a Caterpillar D8 with a LeTourneau-Westinghouse ripper before it was

(Continued on next page)

MOBILIZE FOR PROFIT with SPARTAN industrial mobile units

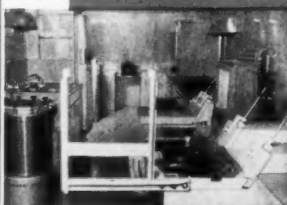
IN THE WORLD'S LARGEST MOBILE HOME FACTORY, Spartan mobile industrial units are built on our modern mass production assembly lines. You can usually select production line units to fit your company's needs from the wide selections of floor plans, interior arrangements and accommodations—or Spartan will design and build units to meet your most exacting requirements. For any kind of field housing, be sure to buy Spartan industrial mobile units—save on your initial investment—eliminate maintenance cost—and mobilize for economy by taking advantage of the famous Spartan rugged mobility. Spartan industrial units are designed especially for "business on the move."



SPARTAN AIRCRAFT COMPANY
1919 N. Sheridan Rd., Tulsa, Oklahoma



Rugged . . . lightweight . . . mobile . . . Spartan industrial units are used by many companies throughout the United States and in many foreign countries.



A field testing laboratory — built right along with the job itself . . . always ready for immediate use.



A fleet of Spartan industrial units enroute to a major oil company. Units are roving classrooms for filling station personnel training program.



The perfect mobile field kitchen . . . planning class, lots of built-in features . . . designed for efficiency and economy.



This Spartan industrial unit is equipped for . . . use as a classroom . . . sales meetings . . . product demonstrations . . . anywhere you want to take it.



Field men can direct company operations from this attractively furnished and fully equipped Spartan mobile office.



Here's a traveling salesroom, with a company's product line completely and neatly displayed. It can be moved easily and quickly.



This Spartan unit is equipped to serve as a parts storage room. Its mobility keeps vital repair parts close to field operations.

For more facts, use Request Card at page 18 and circle No. 348



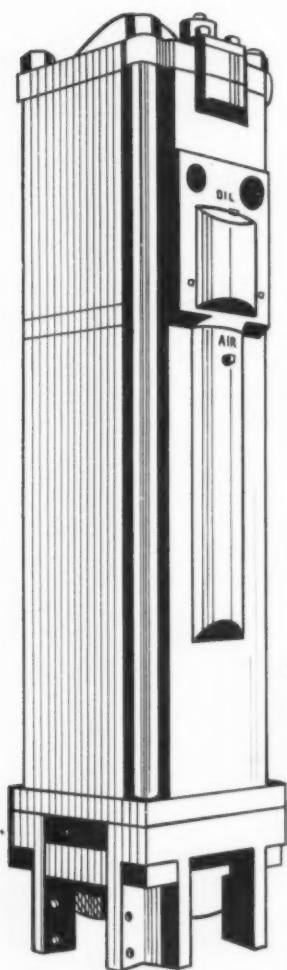
Volcanic cinders, used with the rock to build the embankment, and also crushed for use as base material, are obtained by Euclid scrapers in a borrow pit high above the job. The Cat D8 with LeTourneau-Westinghouse ripper first loosens the tough material.



One of the Euclid 8TD scrapers spreads a load of cinders on the fill, and a Cat D8 tractor pulls a LeTourneau-Westinghouse Model 120 sheepfoot roller to provide compaction.

McKIERNAN-TERRY

DOUBLE-ACTING PILE HAMMERS



McKIERNAN-TERRY PILE HAMMERS ARE USED THROUGHOUT THE WORLD

ESTELINE, TEXAS ~
McKIERNAN-TERRY
DRIVES PILES FOR THE
2553 FT. BRIDGE
ACROSS THE RED RIVER



CUT DRIVING TIME WITH RAPID BLOWS ~
SUSTAINED PILE MOTION ~

ANY GIVEN PILE CAN BE DRIVEN SMOOTHLY AND RAPIDLY INTO ALMOST EVERY TYPE OF SOIL WITH A McKIERNAN-TERRY DOUBLE-ACTING HAMMER. HIGH-FREQUENCY, POWER ASSISTED BLOWS FROM THESE DEPENDABLE UNITS AGITATE THE SURROUNDING SOIL TO PROMOTE LOW-FRICTION MOVEMENT, THUS CONCENTRATING THE DRIVING ENERGY AT THE PILE POINT. THE PILE IS KEPT IN CONTINUOUS MOTION, SO THAT ITS OWN MOMENTUM AIDS SWIFT PENETRATION.

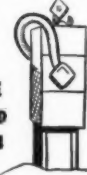
THESE DOUBLE-ACTING HAMMERS ARE AVAILABLE IN ELEVEN MODELS TO COVER ALL JOB SPECIFICATIONS AND CAN BE POWERED BY STEAM OR AIR. ALL ARE HIGHLY EFFECTIVE IN BATTERING; FOUR "DUBL-DUTY" MODELS CAN BE INVERTED FOR PILE EXTRACTION, AND THE B3 SERIES IS DESIGNED TO PERMIT FULL SUBAQUEOUS OPERATION. FOR SPECIFICATIONS, WRITE FOR BULLETIN 58 R.



WESEL, GERMANY ~
McKIERNAN-TERRY PILE
HAMMER DRIVES TIMBER
PILES IN CONSTRUCTING
THE RHINE BRIDGE ~



NEW YORK CITY ~
McKIERNAN-TERRY DOUBLE
ACTING PILE HAMMER USED
IN EXTENDING LEXINGTON
AVENUE SUBWAY ~



McKIERNAN-TERRY CORPORATION

82 RICHARDS AVENUE



DOVER, NEW JERSEY

MAKES ALL TYPES AND SIZES OF PILE HAMMERS & EXTRACTORS

For more facts, use Request Card at page 18 and circle No. 349

(Continued from preceding page)

loaded by the scrapers. Even the scarified material was very abrasive and difficult to load. Two Allis-Chalmers HD-20 tractors often teamed up to load the scrapers, and the operators always tried to take advantage of a downgrade on the loading cycle.

The strippings and the first cinders from the top of the pit were taken directly to the fill, spread in thin layers, and mixed with the rock to build up the subgrade.

Crush cinders for base

A Diamond jaw crusher was then moved into the pit to crush the over-size materials for the base and surface courses. A dozer fed the material to the crusher, and a belt carried the crushed material to a surge bin that loaded the Euclid scrapers.

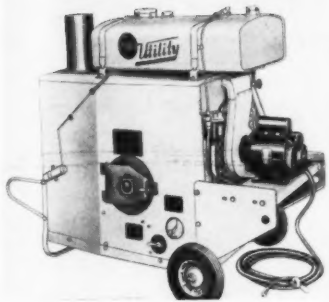
For the 17-inch subbase, the cinders were crushed to a maximum size of 3 inches. This material was placed by the scrapers in three lifts, each lift being watered and rolled with Grace pneumatic rollers. One of these rollers was towed by a rubber-tire tractor; the other was a new, self-propelled machine.

Material for the 3-inch base course and 2-inch surfacing was reduced to minus 1 inch in the same crushing



Job superintendent Charlie Joy watches the tractor-dozers bring rock from the excavation to the stockpile for the Michigan tractor shovel.

CONTRACTORS AND ENGINEERS



Case history

Portable heaters help contractor beat penalty

Facing a \$300-per-day penalty for every day past the set completion date for a dormitory at William Woods College, Fulton, Mo., the John Epple Construction Co., of Columbia, was forced to schedule work for continuous operation. To permit efficient heating for winter construction, the entire building was enclosed in a sheath of Visqueen plastic film. With heat supplied by three Herman Nelson utility portable heaters, temperatures were maintained above freezing even in zero weather—and not one day of work was lost.

According to the company, throughout the winter no maintenance or service on the heaters was necessary except for cleaning.

For further information about these portable heating units, write to the American Air Filter Co., Inc., Dept. C&E, 215 Central Ave., Louisville 8, Ky., or use the Request Card at page 18. Circle No. 167.

Joy appoints manager

Robert W. Eager has been appointed manufacturing manager of Joy Mfg. Co., Pittsburgh manufacturer of heavy machinery. In his new capacity he is responsible for the supervision of corporation staff services to operating divisions on matters of manufacturing, production control, purchasing, traffic, and plant engineering.

(Continued from preceding page)

setup used to produce the subbase material. The base course was spread, watered, and rolled in an operation similar to that used on the subbase.

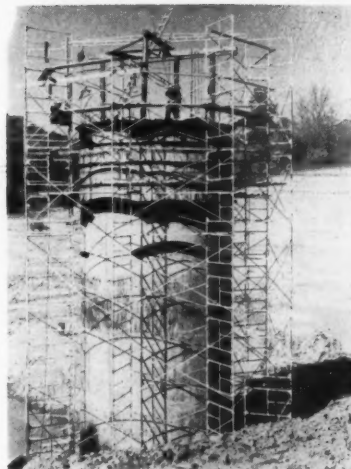
For the two inches of surfacing, the minus 1-inch cinders were mixed with MC-3 cutback asphalt in a travel plant. The mixture was laid out by the motor graders and compacted by a 10-ton tandem roller.

Personnel

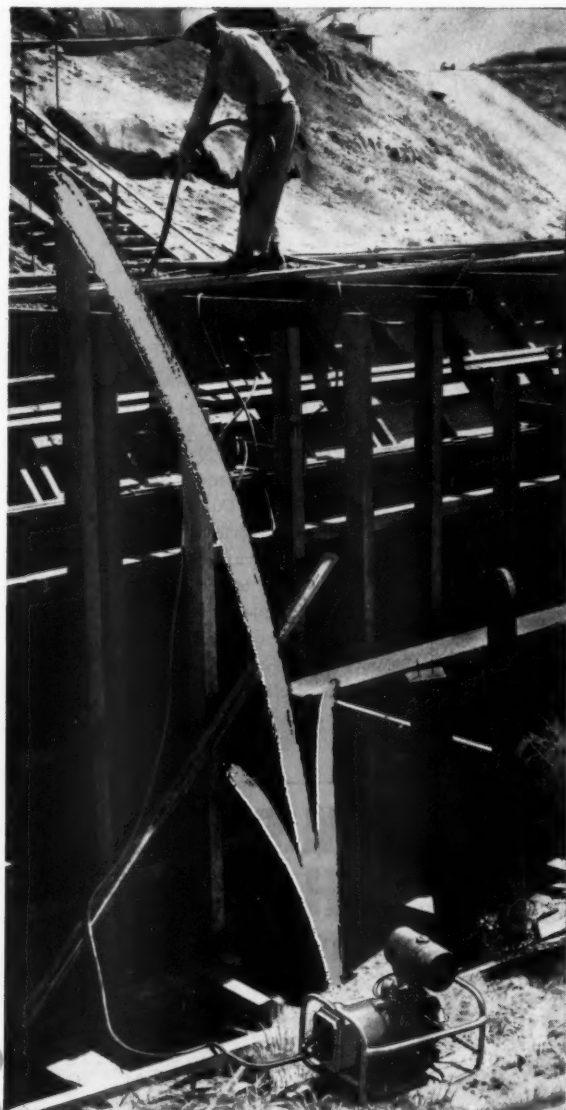
Supervising the operations for W. J. Henson was Charlie R. Joy. The foremen supervising the two primary operations were John Blair and Keith Turley. The project supervisor for the Arizona State Highway Department was Ralph Greglein, working under the supervision of A. L. Chadwick, district engineer of the Flagstaff District. William E. Willey is state highway engineer.

THE END

Case history: A simplified scaffold and winch setup permitted the use of the slip-form type of construction on the Strouds Run Dam at Athens, Ohio, enabling the contractor, Encrete, Inc., of Dayton, Ohio, to do the job with a minimum amount of labor and equipment. The construction involved the inlet structure for the dam. By completely encircling the structure with Bil-Jax portable scaffold and scaffold winches with 75 feet of 1/4-inch cable, Encrete accomplished the pouring rapidly, and there was plenty of room for working as well as inspection. Tubular steel putlogs served as catheads atop the structure. For further information about this scaffolding equipment, write to Bil-Jax, Inc., Dept. C&E, P. O. Box 38, Archbold, Ohio, or use the Request Card at page 18. Circle No. 3.



only the vibrator goes up on the form



SUPER POWER ELECTRIC VIBRATORS

KNOCK DOWN CONCRETE... FAST!

- **HICYCLE MOTOR** has more kick than any other type vibrator. Really speeds up placement of coarse dry mixes of 3" aggregate and 1" or more slump.
- **MOTOR-IN-HEAD DESIGN.** Only the vibrator goes up on the form. Electric cable connects vibrator to gas engine

driven generator located up to 200 feet away.

- **SMALL HEAD DIAMETERS.** Two sizes—1 3/4" and 2 3/8" diameters available.
- **DELIVERS 10,000 V.P.M.** Forms strip clean with no patch work needed.



Chicago Pneumatic

8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

For more facts, use Request Card at page 18 and circle No. 350

Ask for information



Up and away goes a bundle of structural steel for one of the transmission towers being built high in the mountains by Southern California Edison Co. A ground crew makes the hookup to the Sikorsky S-58.



The helicopter arrives at the isolated tower site with its load. Concrete for foundations was also flown in, as were tower crews. Flight distances from loading points were between 3 and 8 miles.

Sky hooks with rotor blades



Don't laugh when a contractor says he needs a sky hook; he may want a helicopter.

These planes have whirled in for work on a number of recent jobs, and their work has been so successful that you can look for an increasing number of contractors to call for a helicopter when what they really need is a sky hook.

Perhaps the most dramatic use of a helicopter on a major construction project is being made by Southern California Edison Co., which is airlifting wooden distribution poles, sections of steel transmission towers, and even crews to inaccessible sites in rugged mountain terrain. This is a long-range program, and estimated savings are big.

On one section of this project, a Sikorsky S-58 helicopter airlifted the

structural steel, plus accessories, for 67 transmission towers of 230 kv. The S-58, the largest certified transport helicopter available today, cruises at 100 mph, can carry a 2½-ton payload on short hauls, or 12 passengers for the normal range of 340 miles.

This stretch, known as the Saugus-Santa Clara section in Ventura County, involved only one-sixth of the ton-miles of the entire project, but it required the handling of 1,185,378 pounds of material. According to Edison Co. officials, the actual cost—including helicopter write-off in the allowable tax write-off period of four years—came to \$6.80 per ton-mile of material handled. This was 10 per cent less than the bare cost of over-the-road truck hauling.

Packing the steel to the load-carrying ability of the helicopter would

have reduced costs to less than \$5 per ton-mile, but when this operation started, loads were prepared for truck shipment and not fitted to the payload capacities of the helicopter. On future operations, the contractor can plan on using the payload capacity of the Sikorsky S-58. With the plane carrying more poundage per flying hour, over-all expenses will be reduced even more than they were on this operation.

Airlift operation

The 7 to 10-ton towers were prepared for the airlift by being broken down into five or six long bundles of angle steel strapped with steel bands, plus four to five packages of plates, also strapped together, and such items as sacks of bolts and rivets. The weight of the lifts varied from

PULL 1500 FORM PINS PER HOUR WITH NEW "CLEVELAND PIN PULLER"

NEW CLEVELAND PIN PULLER requires only one man to operate it. Eliminates any possible damage to concrete because the pulling load is on the forms. Pins and forms have longer life. Pins pulled vertically come out straight.

- ★ Will pull any length pin
- ★ Operator pulls pins in walking position
- ★ Operates either side—going in either direction
- ★ Mounted on rubber tires
- ★ Briggs & Stratton 3 H.P., 4 cycle engine
- ★ Rugged mechanism—requires little maintenance



NEW POWER TRACTION BRIDGE NOW AVAILABLE

Self-propelled bridge with 2¾ H.P. gasoline engine and reversing transmission. Used for dragging burlap, belting, carrying tools, as a cross-over. Equipped with belting mechanism that can be disengaged when not in use. Bridge travel speed is 2½ F.P.M.

THE CLEVELAND FORMGRADER COMPANY

34250 Mills Road

Avon, Ohio

Send more information on

- ☐ Cleveland Pin Puller ☐ Other _____
☐ Power Traction Bridge _____

Name _____

Firm _____

Address _____

MANUFACTURER OF FORMGRADERS, FORM TAMPERS, SCRATCH TEMPLATES, TRAILGRADERS, ROLLERS, PUSH PLANERS, FLOAT BRIDGES, FLOATS, ALUMINUM AND STEEL STRAIGHT EDGES AND PIN PULLERS

Automatic "SLOPE METER"

AIDS OPERATOR • SPEEDS WORK



"INSTRUMENTS THAT HELP YOU MAKE THE GRADE"

SLOPE METERS can be used to advantage on all sizes of tractors, bulldozers, scrapers and graders.

Do you want to . . .

- Make accurate slopes in less time
- Reduce machine time required to make perfect highway crowns
- Speed up night work
- Eliminate costly hand checking
- Construct and check variable slopes while your machines are in motion
- Avoid wavy slopes—Slope Meters give a continuous check between stakes
- Help your operators do more and better work

Then order a SLOPE-METER for each one of your machines today from your Equipment Distributor or

THE SLOPE METER CO.
EXCELSIOR, MINNESOTA

For more facts, circle No. 352

CONTRACTORS AND ENGINEERS

For more facts, use Request Card at page 18 and circle No. 351

Carrying a loaded concrete bucket, a Sikorsky S-58 maneuvers into position for a footing pour at a tower site on another part of the job between the Saugus and Chatsworth substations.

Helicopters have been used for specialized construction operations for some time, but contractors have recently taken the whirley birds and virtually made them into important machines of construction. In a number of today's projects, they are transporting men and equipment to remote sites, placing concrete, lifting heavy machinery, and doing other work. On these jobs, they have truly filled the place reserved for the long-needed sky hook.



Helicopters prove economical and versatile on different projects throughout the country

2,300 to 3,200 pounds; the average was about 2,600 pounds. The plates, rivets, and bolts, carried in a steel basket about 4 feet square, made an average load weighing 2,400 pounds.

The distances from the loading yards to the tower sites were between 3 and 8 miles. The yards were at an average elevation of 300 to 350 feet above sea level, while the elevations of the tower drop points varied from 900 to 1,250 feet above sea level.

Weather delayed flight operations only once, when a ground fog held up the start of operations for about an hour. The rest of the time, there was ideal flying weather, with temperatures between 65 and 75 degrees.

Two pilots always manned the S-58 during hauling operations. The first pilot flew the helicopter from the yard pickup to the drop at the tower

site. During this time, the co-pilot acted as a spotter, checking the stability of the sling load during the flight. He also watched for clearance between the helicopter and existing power lines and towers when the ship was working in restricted areas. This pilot also flew the helicopter from the tower site back to the pickup points.

Ground crews at the pickup yard consisted of three men. Two prepared the slings and baskets and made the hookup. The third signaled the ship while the load was being hooked up and gave the "go" signal after checking the position of the hanging load. Between pickups, this man checked the weight of the next load and radioed the information to the returning aircraft.

(Continued on next page)

Help your workers to help you...



KEEP THOSE JOBS ON SCHEDULE . . .

KEEP PROFITS UP, COSTS DOWN



PUT AJAX TO WORK FOR YOU

ABSENTEEISM, you know, upsets schedules, slows production, boosts costs, cuts profits. AJAX complete drinking water service offers three-way help in keeping lost time at a minimum, work on schedule.

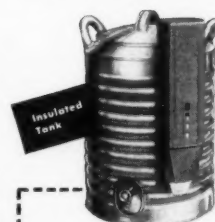
Safety messages — imprinted free on AJAX (or AERO) Cups do help reduce lost-time accidents by constant reminder of the routine precautions we are all so prone to neglect.

Clean, crisp AJAX Cups — the most sanitary way to provide drinking water — reduce hazard of contagions like the common cold that cost industry 300,000,000 lost man-hours per year.

Comfort and convenience of AJAX Cups encourages adequate water intake — vital to peak efficiency — boosts worker morale, is actually the most time-saving way of providing clean drinking water.

Why don't you take advantage of the three-way protection offered by AJAX complete drinking water service?

GET THE FULL STORY Ask your contractors' supply house or paper merchant for samples of imprinted AJAX Cups and equipment and folder giving complete details. Or write to



AJAX® CUPS and Drinking Water Tanks deliver fresh water to workers — mean less time lost on the job. 4 oz., 6 oz. and 7 oz. cups, imprinted with assorted stock safety messages at no extra cost — or your own message to order. AJAX Cups and Dispensers are ideal for use with any tanks, barrels or pipeline faucets.



TRANSPORT MEN, MATERIALS with SPEED, SAFETY

- 40-foot long 12 foot beam
- Welded-steel construction
- Diesel powered
- Carries up to 35 men
- Portable—Moves over land on tractor trailer
- Low maintenance

For bridge construction, drilling, dam, pipeline, crib, dredging or other offshore work, contractors have found the HANSEN SEA TRUCK a "pick up truck on water." It transports men and materials to and from the job—even does light towing.

Built by one of the oldest and best-known companies. Standard model fitted with all necessary equipment for continuous operation. Many optional features available. Special arrangements designed to suit your needs. Other types larger or smaller also available.

Write or wire for basic specification and data—or let us submit drawings to suit your requirements.

HANS HANSEN WELDING Co.

2824 Summit St.
Toledo 11, Ohio



United States Envelope Company

General Offices: Springfield 2, Massachusetts

15 Divisions from Coast to Coast

For more facts, use Request Card at page 18 and circle No. 354

For more facts, use Request Card at page 18 and circle No. 353



Pacific Gas & Electric uses a Sikorsky S-58 to set wood poles on 4,200-foot Santa Ynez Mountain to feed power to a TV transmitter. Two men hook one of the poles to the helicopter.



The 32-foot pole hangs just below the fuselage as the helicopter rises into the air above the loading point.

(Continued from preceding page)

The tower crew also consisted of three men. Two of them collected the cables and shackles from the loads carried to the site and emptied the basket of the plates and bolts. Then they loaded the slings into the basket, which was rehooked to the helicopter after the last of the steel was delivered to the site. A third man, stationed on the hilltop, signaled the helicopter in for the basket pickup. This done, he flew the other two men to the next tower site in a small Bell helicopter.

This smaller Bell helicopter gave the tower-site crews the same mobility and speed as the S-58 in getting from one tower site to another.

During the first two or three days of operations, the tonnage hauled was low because the tower crews were unfamiliar with the new technique. When they got used to a helicopter hovering 2 to 3 feet above their heads, their efficiency increased to a point where it required only 30 to 45 seconds to hook up or release a load at the sites.

Here are some of the job production figures:

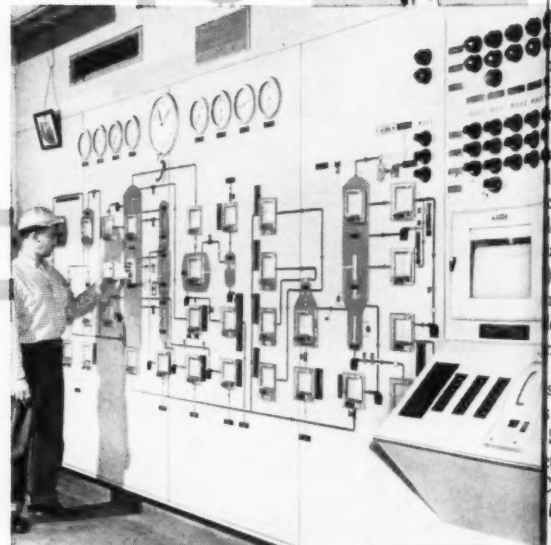
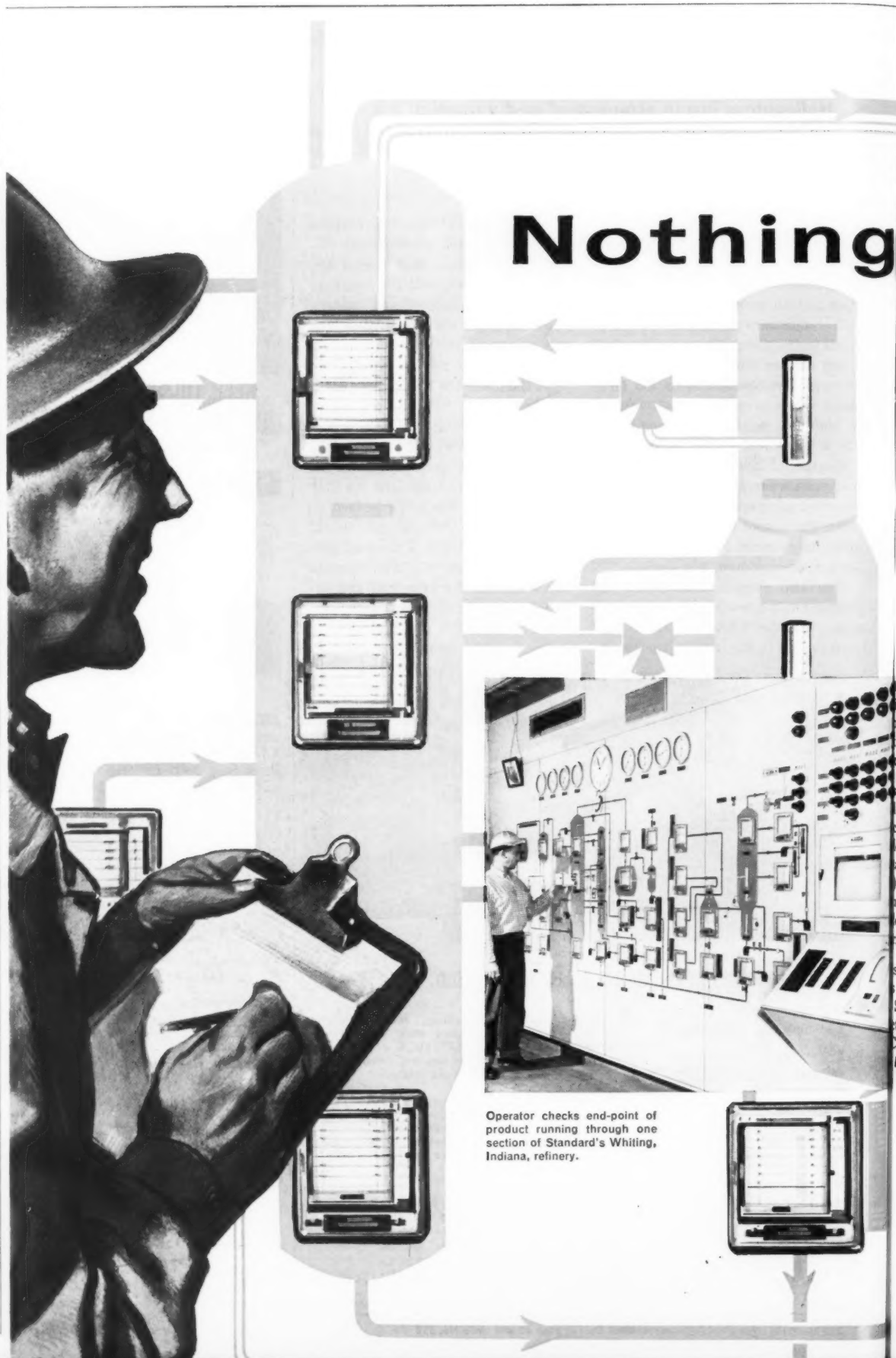
Total on-the-job flight time	65 hours 13 minutes
Total weight carried	1,185,378 pounds
Over-all average per day (19 days)	79,000 pounds
Over-all average per hour	19,942 pounds

Some precautions needed

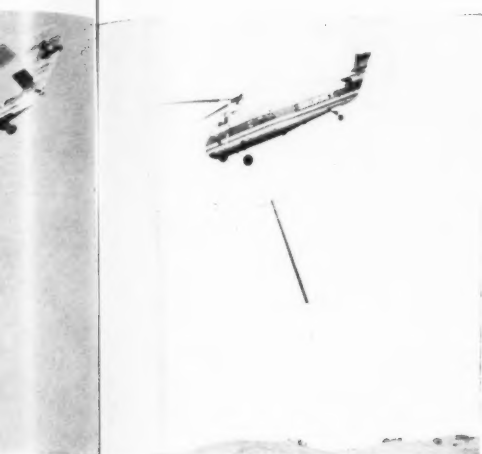
Since the hovering helicopter caused clouds of dust to rise and impaired the visibility of the yard crew and pilot, a water truck was used to spray the loading area. But a truck could not get to the tower crew, and the men found it necessary to wear masks or goggles to protect their eyes and faces from the sandblasting effect of the rotor wash.

One other precaution may be needed in work of this kind. Static electricity builds up on a helicopter, and it may sometimes give jolts to ground crews as they hook up the sling loads. Rubber gloves or a grounding wire can eliminate these shocks.

During the job, there was no excessive vibration of the loads, and none of them had to be released during flight. In general, they rode well in a transverse position below the helicopter, allowing the pilots to view both ends. The arming switch in the



Operator checks end-point of product running through one section of Standard's Whiting, Indiana, refinery.



Heading toward the mountain, the helicopter flies easily with its load. Poles were set in two days. With ordinary methods, the job would have taken two months.

The helicopter positions the pole in its hole at the mountaintop location. Use of this method put the cost of setting a pole at \$70, an estimated saving of \$180 per pole over the conventional method.



ngjets by

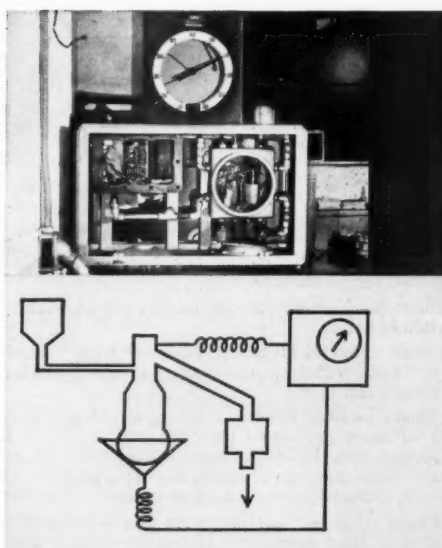
Automatic

end-point testing
device developed
by Standard Oil
research men
makes certain of the
uniform quality of
diesel fuel and gasoline
delivered to you.

ists at Standard Oil never stop in their drive to improve and improve again the uniform quality of the petroleum products bear the Standard Oil trade-mark. These engineering research ists have now created wholly new instruments for performing continuous physical analysis *automatically*.

uch instrument automatically performs the physical analysis determines end point. Using it, refineries maintain a continuous ction of the temperature at which gasoline and diesel fuels are etely distilled. To you, this means that Standard is able to ain a constant control over the uniformity and high quality the fuels you use to power your diesel engines and (2) the ne for your truck fleets. It also means that power-producing eum products, with their constantly controlled end point, burn mly, give you uniform high performance.

s part of the research pay-out, the "something more" research into the products you buy from Standard. This is your return Standard's investment in research. And now there are 48 et offices in the 15 Midwest and Rocky Mountain states to serve Call the one nearest you. **Standard Oil Company (Indiana)**, 910 Michigan Avenue, Chicago 80, Illinois.



Automatic end-point tester works this way. A small sample is placed in an electrically heated flask. The temperature is measured and recorded during a heating cycle when distillation is accomplished. Distillate is condensed and drained, the flask temperature is lowered by introduction of the next sample, and the apparatus is ready for another test.



You expect more from **STANDARD** and get it!

ship was flipped to "automatic" a few seconds before the tower site was reached. Then, as soon as the loads made contact with the ground, they were automatically released.

Other work

Southern California Edison Co. has made use of the Sikorsky S-58 for similar work on its 16,000-volt power line from the Big Creek Powerhouse No. 8 near Kinsman Flat to the construction site of its \$49,600,000 Mammoth Pool hydroelectric project. This project, including a 950-foot-long and 330-foot-high earth-fill dam, a powerhouse with a generating capacity of 126,000 kw, and an 8-mile tunnel, will become part of the company's Big Creek-San Joaquin River hydroelectric development.

Men and equipment building a section of transmission line between the Saugus and Chatsworth substations were first flown to tower sites to dig foundation holes. Hoppers were then airlifted to the sites for foundation pours. Concrete was flown to the site in 1/2-cubic-yard buckets equipped with rubberized sleeves. These buckets, loaded on the ground, were attached to a line and hook carried by the helicopter. Enough concrete for the four footings of a tower was poured in 20 minutes. This alone is a job that would require an entire day with ground forces.

On this stretch, a special type of "guide shoe" was used to join tower sections. As the helicopter eased into position, the shoes clamped over the feet of each new section, and both were held rigid until they could be bolted. In one spectacular operation, a helicopter even picked up a complete tower, carried it over rivers and gorges, and placed it gently on its footings.

Pacific Gas uses "sky hook"

Another company that used a "sky hook" successfully was Pacific Gas & Electric Co. This firm had a helicopter set more than 60 wood poles on the steep slope of the 4,200-foot Santa Ynez Mountain to feed additional power to a TV transmitter. This job, estimated to take two months with the usual construction techniques, was completed in two days and required 8 flying hours. The estimated cost with conventional methods was about \$250 per pole; use of the helicopter brought the cost

(Continued on next page)



A heavy heating and ventilating unit is set on the roof of a Convair hangar at San Diego, Calif., by an S-58. Usual methods were useless. Cranes could not reach some portions of the roof, and they could not work from the roof without additional reinforcing being set.

New York Trap Rock Corp.'s Bell 47-G uses its pontoons to push an aggregate barge into deep water on the Hudson River near Newburgh, N. Y. The barge had run aground, and a tug could not get to it.



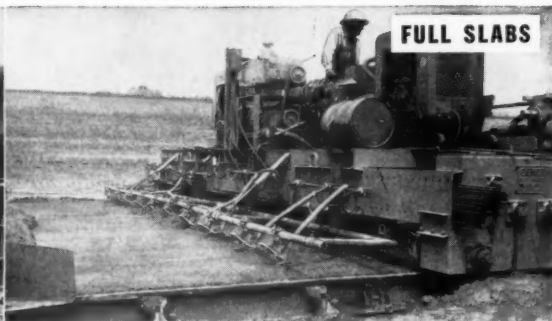
(Continued from preceding page)

Vibrate your way to higher profits with... Maginniss Hi-Lectric Concrete Vibrators



STRUCTURES

MAGINNISS CONCRETE VIBRATORS speed up pours, cut labor costs, produce blemish-free concrete. Two 180 cycle, 120 volt models; HCV-3 for bridge, pavement and building work; HCV-6 for massive structures. Powered by choice of nine different gasoline or electric driven generators. (Uni-lectric 110 volt universal motor vibrators for small jobs, too.)



FULL SLABS

MAGINNISS INTERNAL FULL SLAB VIBRATOR ATTACHMENT provides uniform vibration of entire slab, boosts production, reduces finishing to one pass. 180 cycle induction motor-in-head vibrators, fully adjustable for any spacing, and for depths of 4 to 19 in. Powered by compact, lightweight engine-generator. Fits all makes of paving machines.



SIDE FORMS

MAGINNISS SIDE FORM VIBRATOR ATTACHMENT fits all makes of paving machines. Prevents honeycomb, eliminates hand labor, speeds production. 180 cycle induction motor-in-head vibrators, fully adjustable for depth and spacing, choice of instant manual or hydraulic retraction. Generator also powers floodlights and service tools.



PAVEMENT WIDENING

MAGINNISS PAVEMENT WIDENING VIBRATOR ATTACHMENT fits any widener, eliminates need for accessory vibrating screed or for hand finishing. 180 cycle induction motor-in-head vibrators in hopper plasticize stiffest concrete... permit production rates up to 25 fpm on slip-form paving. Generator also powers service tools, floodlights.

On jobs where profit-conscious contractors are at work, you'll find Maginniss Hi-lectric vibrators in action!

That's because powerful Hi-lectric vibrators with induction motor-in-head design, produce up to 10,500 VPM... cut placing time... produce sounder, better looking concrete at lower cost.

Whether you're pouring footers, building structures, paving highways or airports, it'll pay you to investigate—and use—the profit-boosting features of Maginniss Hi-lectrics. You'll find that Hi-lectric vibrators offer true one-man operation... that they have no cumbersome, hard-to-maintain flexible shafts... that they provide plenty of power to handle stiffest concrete mixes with ease.

Whatever your concrete vibrating needs may be, your nearby Maginniss distributor can recommend... and supply... Hi-lectric vibrators and generators exactly suited to your requirements. Get all the facts today!

AA-4522

In 85 principal cities

Find your nearest distributor in the "Yellow Pages"



MAGINNISS

Power Tool Company

154 Distl Avenue, Mansfield, Ohio

For all your concrete vibrating needs...



For more facts, use Request Card at page 18 and circle No. 356

to about \$70 per pole.

The poles weighed 900 to 1,000 pounds, were about 32 feet long, and were mostly of the single-arm, four-insulator type. The transformer pole, about 40 feet long and with a cluster of seven crossarms, had to be mounted at the crest of the peak. This one weighed about 1,600 pounds.

All the poles were set in the post holes as planned. On a Saturday, 24 poles were set during 3 hours and 15 minutes of on-the-job flying. On the following Monday, 39 poles were set during 4 hours and 17 minutes' flying time. Total flying time was 7 hours and 32 minutes. This meant that a pole was set for every 7½ minutes of flying time.

Airlift at airport

Earlier this year, a Sikorsky S-58 positioned 38 air-conditioning units on hangar roofs in only 7 hours. Each unit weighed over 3,000 pounds; the total lift weighed 205,000 pounds.

This operation took place at Convair's new astronautics division being built in San Diego, Calif. The contractor estimated that it would have taken about a month to raise the units onto the roofs if the usual methods had been used. The work-days saved add a good deal more to the estimated saving of \$10,000 in labor and equipment alone.

The air-conditioning units, plus such accessories as pipe and valves, had to be set on predetermined locations, each prepared with four anchor bolts. These locations were reinforced to support the load. But the remaining area was not, and heavy lifting rigs could not be used on the roof. The location of the units on the hangar roofs made it impractical to use a crane.

The contractor leased the helicopter, plus pilot, from Sikorsky and, because this application was still in the development stage, he was charged merely an hourly rate. This rate was determined by equating it to the cost that would be incurred had the contractor owned and operated the helicopter.

Without the helicopter, the contractor would have had to disassemble the air-conditioning units and lift the sections in elevators. As it was, the units remained completely assembled during installation.

CONTRACTORS AND ENGINEERS



1.



2.



3.

A Bell 47-H helicopter and an electric measuring device cut nine-tenths off the time needed for a 90-mile highway location job in West Virginia. 1. The surveyor sets up a Tellurometer. 2. The device clocks microwaves sent to a receiver, translates the time into distance. 3. The helicopter flies in to pick up the engineer for a 3-minute flight to the next point. On foot, the trip takes several hours.

One of the latest jobs for a helicopter was on a 90-mile highway location job in West Virginia, which also used an electronic Tellurometer to establish second order traverse stations along the center line of the stretch. These lines had to be run in from Coast and Geodetic Survey stations that were located 15 to 20 miles apart and several miles off the proposed route.

Air Survey Corp., Arlington, Va., which handled the work for the consulting engineering firm of J. E. Greiner of Baltimore, was faced with working in terrain that was rough, hilly, and timbered, and difficult to chain or triangulate. Roads were few, and even these were unusable after the heavy snows and rains earlier this year.

But by chartering a Bell 47-H helicopter, and using the Tellurometer—a device in use only a few months—Air Survey completed the job in one-tenth the time that would ordinarily have been required. The first assignment was completed in 12 working days.

The plane leapfrogged the crew of four down the traverse in record time. One engineer set up a portable radarlike transmitter at one point, and a teammate, usually not in sight of the engineer, mounted a receiver on a tripod at the other point. Microwaves were then sent across the intervening distance, and the time they took to travel between the two points was then translated into miles, feet, and inches. Party members maintained contact with each other and the helicopter by Motorola two-way radio. The Tellurometer was equipped with its own radiophones, which the crew used for operating the equipment and for directing each other as they turned angles.

In average weather, the crew of four established points at the rate of one per hour. This included reconnaissance and turning angles at the same time. It took about 15 minutes to set up or dismantle the Tellurometer, and about 20 minutes to take readings.

The Southern California Edison
(Continued on next page)

NEW NEW NEW Convertible 1/2 yd. HYDROHOE- HYDROSHOVEL- HYDROCRANE

You asked for it—here it is! Real production digging, yards and yards of it, fast . . . a total of 90 hydraulic horsepower at your command. Dipper reversed, it's a powerful swing loader and it's convertible to crane, clamshell, auger, etc. It's the all-new H-5 Hydrohoe-Hydroshovel!

NEW DIFFERENTIAL VALVE LETS YOU SELECT SPEED OR FORCE

Optional speed and force ranges are available in the digging cycle. That means you can cut through easy digging with maximum speed—or use the optional, higher-range force action (with slower speed) to dig through frozen ground, tough clay, coral, etc.

NEW PUSH-BUTTON SELECTOR VALVES STEER POWER WHERE IT'S NEEDED

Selector valve buttons on the control levers let you concentrate horsepower where you need it when you want it. Operator can double the speed of any motion at the touch of a button.

NEW COMBINATION OF RAM FORCES EXCEEDS 90 TONS

189,000 pounds of ram force combined in crowd-down, dig, and wrist actions. Combination of wrist action and telescoping boom provides more favorable dumping ranges (and cleaner dumps) both in tight and at maximum reaches.

PLUS ALL THESE FEATURES

Specialized boom telescope action—four hydraulic outriggers—low-cost carrier—up to 50 mph on open roads—all-hydraulic controls—short tail swing—four sizes of dippers.

See your Bucyrus-Erie distributor or send coupon for full details about the new 1/2-yd. H-5 Hydrohoe-Hydroshovel—tops for high-speed digging . . . big production digging . . . tricky digging.

234H58C

NEW all-hydraulic H-5
Hydrohoe-Hydroshovel
combines high production
with traditional
Hydrocrane mobility,
flexibility



BUCYRUS-ERIE

A Familiar Sign at Scenes of Progress

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN

BUCYRUS-ERIE CO.
SOUTH MILWAUKEE, WISCONSIN

Gentlemen:

Please send me complete details on the new H-5 Hydrohoe.

Name _____

Company _____

Address _____

City _____

State _____

For more facts, use coupon or circle No. 357→

234H

(Continued from preceding page)

Co. job, the work of Pacific Gas & Electric Co., and the Convair project are only a few major jobs that have used helicopters for "sky hook" operations in this country. Overseas constructors, too, are catching onto the idea for big jobs. In Remagen, West Germany, a helicopter was used to pick up a guide line from a power pylon on one side of the Rhine River and fly it to an electrician, perched 200 feet above ground on a pylon on the opposite side. This done, a cable was hauled across the river to link the pylons.

All these are big projects. And more use will be made of helicopters on big jobs in the future. But the whirly birds will also be doing plenty

of jobs for small and medium-sized contractors and producers. New York Trap Rock Corp., a West Nyack, N. Y., stone-crushing firm, is one of those leading the way to a general use of helicopters. It has its own helicopter and uses it for many purposes, including the delivery of payrolls. The latest opportunity for a new use of the helicopter came early this spring.

One of the firm's 215 deck cargo barges slipped its moorings at Haverstraw, N. Y., drifted four miles on the Hudson River, and ran aground on the east bank. A tug was unable to help in the shallow water near land. That was when Trap Rock's helicopter went into action. The pilot dropped his Bell 47-G to the deck of the empty barge, tucked one of the

floats against the starboard side, and gunned the motor to push the barge out into the river. The tug took over from there, bringing the barge to the company's shipyard at Newburgh for an inspection of damages.

It seems that it will be a long, long time before construction runs out of new jobs that can be handled by a helicopter—or a "sky hook".

THE END

Case history:

Measuring device proves efficient estimating tool

A Southern California contractor, currently working on a \$3 million water-main project for the Los Angeles Metropolitan Water District, is



One man operates the Rolatape measuring wheel to estimate resurfacing quantities needed when this water-main job is finished.

saving time and money by ingenious use of a measuring device on one phase of the job.

The ABC Construction Co. of Norwalk, Calif., is installing 48-inch pre-cast-concrete pipe along a 7-mile route. Resurfacing of the street after the trench has been filled in has been let to a subcontractor, but since ABC is paying the subcontractor by the square foot of resurfacing, estimates of material needed must be made carefully.

Instead of using a conventional steel measuring tape, or the less accurate and time-consuming pacing method, ABC is using a Rolatape measuring wheel to measure surface areas and figure resurfacing quantities. A special counting device on the wheel records distances in feet as the wheel is rolled along by one man. The extra man needed for conventional tape measuring is thereby eliminated, as well as the time spent in winding and unwinding the tape, logging data, etc.

ABC superintendent Jack Parker reports the Rolatape "ideal" for this important estimating work, adding that the measuring wheel has proved fast and accurate in all kinds of weather.

For further information write to Rolatape, Inc., Dept. C&E, P. O. Box 1190, Santa Monica, Calif., or use the Request Card at page 18. Circle No. 182.

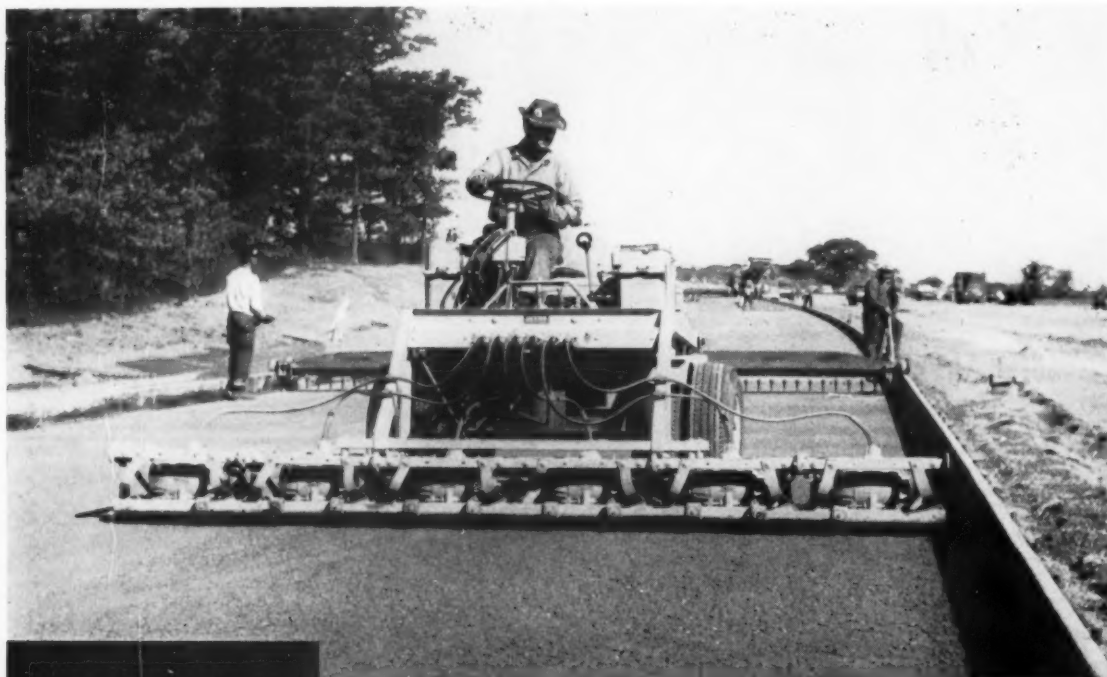
J. I. Case elects

Former executive vice president Marc B. Rojzman has been elected president of the J. I. Case Co., Racine, Wis. In addition to his former jurisdiction over sales, engineering, and finance, Rojzman will also assume responsibility for manufacturing.

John T. Brown, former president and chairman, was re-elected chairman of the board.

Swivel firm changes name

General Machine & Welding Works, Inc., Pomona, Calif., has changed its name to Miller-Swivel Products, Inc. The company manufactures swivels for industry.



JACKSON COMPACTORS

PROVIDE TOP COMPACTION PERFORMANCE, UNMATCHED JOB ADAPTABILITY!

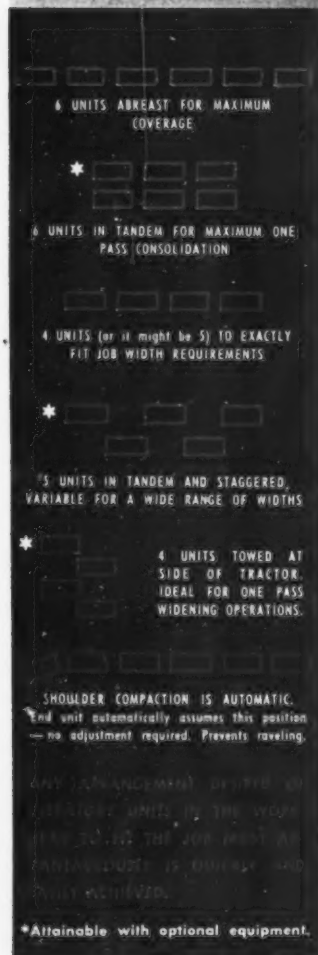
A combination which accounts for the fact that more of these machines have been used on major paving projects than all other pan type compactors combined . . . and their popularity continues to increase. Tremendously powerful vibratory action provides 100% of specified density of any material normally used in macadam base or sub-base courses in the shortest possible time. Each unit in the workhead supplies 4200 THREE-TON BLOWS PER MINUTE. And they are FAR MORE VERSATILE THAN ANY OTHER COMPACTOR, ideally adjustable to each and every job requirement. Coverage is what you want it to be, up to 13', 3". Any arrangement of the compactor units, as indicated, is quickly attainable. With this machine you can compact areas others can't touch, a factor that eliminates lost motion and saves a great deal of time and money. And, of course, it is equally effective on all types of granular soil fills and similar projects. By all means inspect it at your Jackson distributor.

FOR SALE OR RENT AT YOUR JACKSON DISTRIBUTOR . . . name and descriptive literature sent on request

JACKSON VIBRATORS, INC.

LUDINGTON • MICHIGAN

For more facts, use Request Card at page 18 and circle No. 358



Any of the compacting units in the workhead can be fitted with operating handle and used exactly like the nationally renowned Jackson manually guided Compactors. Perfect for getting into spots others can't touch. With twin hook-up of two units one man will compact 1,200 sq. yds. in 6" layers per hour.

Case history

Tractor-mounted spreader lays up to 1,000 tph

The Tractor Spreader Co.'s Model 100 Jersey Spreader provided a Tennessee contractor with production rates of up to 1,000 tph in laying loose aggregate for road construction.

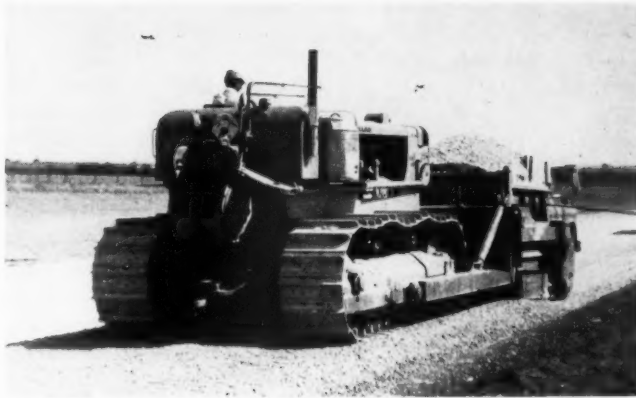
At the time of the report, from the J. A. Hadley Construction Co., of Humboldt, the tractor-mounted unit had laid nearly 2 million tons of material, with maintenance still only nominal. Most of the work was performed on the West Virginia, Kansas, and Kentucky turnpikes.

Jersey Spreaders are designed to be mounted on the push beams of crawler-type tractors after the dozer blade has been removed. Without spe-

cial attachments, they can be used with either cable-controlled or hydraulic dozers. To feed stone from any type of dump truck directly into the hopper, the truck is backed up to the hopper and the body raised. The tractor then provides forward motion to the truck, which is steered by its operator.

The units are available for a variety of tractor makes and sizes. Mounting time is about 30 minutes.

For further information write to the Tractor Spreader Co., Dept. C&E, 630 Terrace Ave., Hasbrouck Heights, N. J., or use the Request Card at page 18. Circle No. 138.



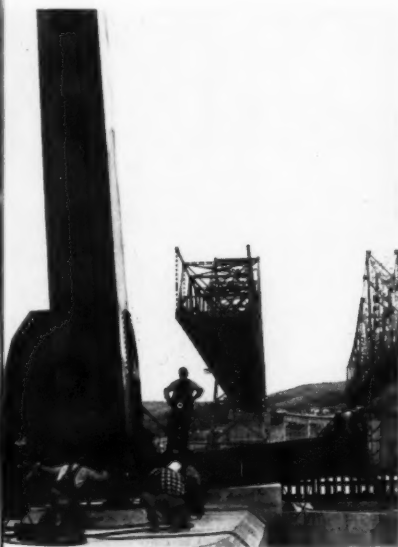
Mounted on the push beams of a Cat D8, and charged by the dump truck in front, a Jersey Spreader lays aggregate for road construction. The unit is offered for a variety of tractor makes and sizes.

Case history

Unusual bridge design saves estimated \$800,000

The new bridge under construction by U. S. Steel's American Bridge Division across California's Carquinez Strait looks a lot like its "twin", built across the strait 30 years ago. But the similarity just about ends with the outward appearance of the two spans.

Three major innovations in bridge building reportedly are incorporated into the new span. They are the use of lightweight USS T-1 steel in the most highly stressed truss members; use of high-strength steel bolts instead of conventional rivets at all connecting points; all-welded fabrication of the steel truss members.



The new bridge, like the old one, is a double-cantilever structure with four spans. Its two end spans are 500 feet each, and the two center spans are 1,100 feet each. The structure is supported by three towers set on four piers.

According to computations by the state of California, the use of USS T-1 steel will save the state approximately \$800,000 in building the new span.

For further information write to the United States Steel Corp., American Bridge Division, Dept. C&E, 525 William Penn Place, Pittsburgh 30, Pa., or use the Request Card at page 18. Circle No. 180.

Make the Grade in Profits



Bring **NOWness** to Your Operations
...with ASSOCIATES Equipment Financing

To earn maximum profits, replace and upgrade your equipment when needed, without depleting vital working funds ... finance it through Associates!

Associates financing experts will work closely with you and your equipment dealer to plan arrangements and terms best adapted to your own situation. Whether you select straight-line financing, or an accelerated method, Associates will speed-the-deal for you with a minimum of red tape ... through one of over 200 local branch offices.

Contact your equipment dealer now for further information on Associates financing. Send coupon today for "Money to Grow On" ... it's free!

NOW ... expand and meet competitive situations by purchasing new equipment when it's needed.

NOW ... benefit from the cost-saving advantages of new equipment ... pay for it from additional profits.

NOW ... make necessary additions and replacements without suddenly draining vital working funds.

NOW ... take advantage of accelerated write-off methods of figuring depreciation in the financing of your equipment.

NOW ... enjoy greater operating efficiency; reduce maintenance and operating costs by updating and upgrading equipment.

SEND FOR YOUR FREE COPY TODAY!

"Money to Grow On" is a new forty page book which explains the "mechanics" of equipment financing, fixed asset loans, advances for special situations and other Associates financing services.



ASSOCIATES DISCOUNT CORPORATION

Dept. 202 Associates Building, South Bend 24, Indiana

☐ Please send my free copy of "Money to Grow On."

☐ Please send information on Associates financing:

Type of equipment _____

Name _____

Title _____ Company Name _____

Address _____

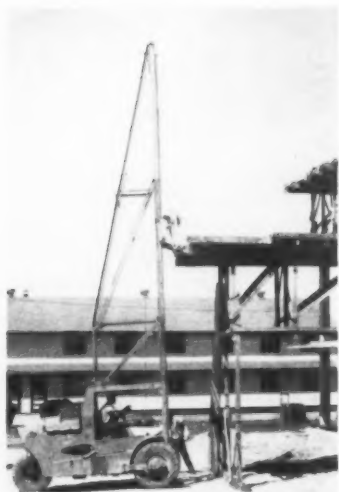
City _____ State _____

Associates

DISCOUNT CORPORATION

Associates Building, South Bend 24, Indiana

For more facts, use coupon, or Request Card at page 18 and circle No. 359



A 12 x 22-foot tower section, pre-assembled as a single unit, is lowered to clear overhead obstructions by means of the Ellis clamps. This method cut drastically the time usually required for assembling and dismantling forms.

Case history

Build forms and pour; re-use on next floor

Time required for assembling and dismantling forms in constructing two buildings at the Goodfellow Air Force Base, San Angelo, Texas, was cut drastically through the use of movable tower sections. The Warner Construction Co., of San Angelo, and the F. M. Equipment Co., of Dallas, jointly developed this application of Ellis Mfg. Co. methods and products.

Basically the method entailed building a series of tower sections, enough to do a complete floor at one time, then moving them to another floor for re-use without complicated dismantling and re-erecting.

Each 1,950-pound section consisted of decking, joists, purlins, and Ellis adjustable shores. A Scoopmobile moved the sections from floor to floor and building to building.

Only 400 shores were required, and forming lumber was re-used many times with little or no waste. This method reportedly saved up to 75 per cent in time and labor, as well as materials.

For further information about Ellis methods for suspended reinforced-concrete construction write to the Ellis Mfg. Co., Inc., Dept. C&E, 211 N.W. 4th St., Oklahoma City, Okla., or use the Request Card at page 18. Circle No. 153.

Film shows ways to apply metal horizontal shoring

"Span and Save" shows the current methods of applying Spanall, an all-metal horizontal shoring for beam and slab concrete floor forms. The 15-minute film depicts stripping and installation methods at building sites in various parts of the country.

The sound-color film is available without cost for group showings to building and construction contractors, architects, societies, schools, and colleges. Requests should be addressed to Spanall of the Americas, Inc., 787 United Nations Plaza, New York 17, N. Y.

Case history

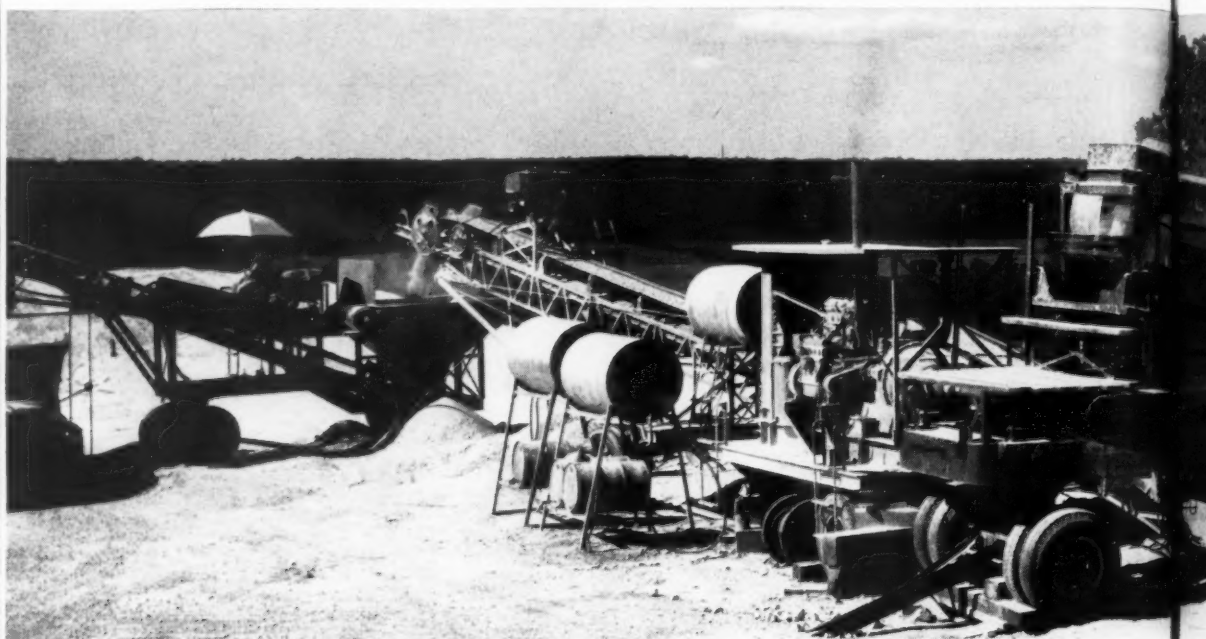
\$20,000-a-year savings claimed for photocopier

Using a Contoura-Portable photocopier to "lift off" pertinent parts of blueprints, the consulting engineering firm of Farkus & Barron, with a main office in New York City and branch offices in Chicago and Toronto, saves one or two days on each inter-office communication. Since the company has hundreds of these communications in a month, it estimates that the machine saves the salaries of two draftsmen, or \$20,000 a year.

By placing the machine face down on the material to be copied, the

operator can lift any part of any blueprint needed for immediate distribution to the office or department concerned. The firm also uses the unit for lifting off maps, charts, and specifications, as well as for copying editorial material and drawings from bound books.

For further information about this portable photocopier, write to F. G. Ludwig, Inc., Dept. C&E, 235 Coulter St., Old Saybrook, Conn., or use the Request Card at page 18. Circle No. 173.



On this portable crushing operation, producing materials for use on a grading and drainage contract for the Missouri Freeway

construction project near Joplin, Mo., the W. J. Menefee Construction Co. uses 3 Cat Engines to power this crusher.

He staked his (business) life

This big 100% Cat fleet owner says: "The dependability of engine power by Caterpillar has always made it possible to anticipate true costs—takes the guesswork out of bidding."

From a modest beginning as a small contractor, the highly successful W. J. Menefee Construction Company of Sedalia, Mo., has bet its business life on Caterpillar Engines and machines across the board.

"Experience has shown us that we can always rely on Cat Engine power," says Mr. E. W. Menefee, president.

Recently this big spread was responsible for 9 miles of grading and drainage, including the interchange, to join the Missouri Freeway with Oklahoma's Northeastern Turnpike. Besides a variety of modern, heavy-duty Cat Engines to power crusher, shovels and compressors, Menefee is getting this

big, tough job done on time with a large fleet of Caterpillar equipment, including DW21s and DW-10s, D9s and D8s (with No. 28 Rippers) and No. 12 Motor Graders.

This contractor's policy of always specifying Cat Engine power and machines—coupled with sound management practices—has paid off in profits. Like other successful contractors, this spread gains solid advantages by relying all the way on Cat equipment. Its reputation and preference by contractors mean pride of ownership, high trade-ins, and an organization that stands behind the product.

Reliably rated Cat Diesel Engines and Electric Sets give more work for each dollar spent for purchase, repairs and operation. Production is maintained at an even level because there is no appreciable letdown in power as equipment ages.

Cat DW21 Wheel Tractors pushloaded by a big D9 work in tough chert conglomerate on Menefee's Freeway job.



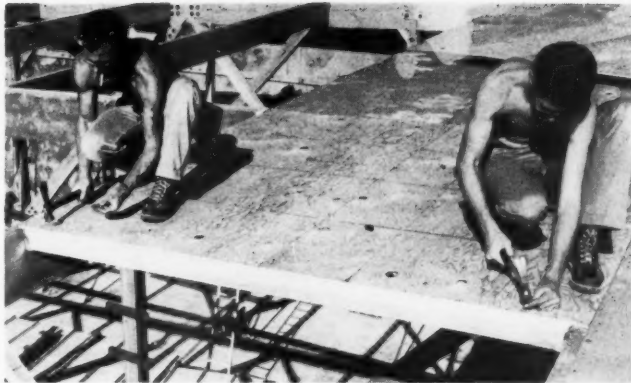
Cat Diesel drives a pneumatic compressor drilling blast holes in rock quarry for materials used on the Freeway job.



Test on prestressed beam

A 70-foot concrete bridge beam, manufactured by the Concrete Products Division of American-Marietta Co., Chicago, Ill., was tested on Lehigh University's 5-million-pound universal testing machine. The beam, a combination of box-beam construction plus a concrete slab cast to simulate a field slab, was subjected to a 40-ton downward thrust exerted by the machine on the center of the beam. The test proved the feasibility of factory-made prestressed concrete and a field-cast slab working as a unit to resist loads.

Case history: Employing a panelized fir plywood system for framing and shear diaphragm, Berkeley Plywood Co. installed a 96,000-square-foot roof on the Fibreboard Products Co. in Sumner, Wash. Men in photo are securing the 8 X 8-foot prefabricated sections by nailing through the plywood and the hanger into the purlin, thereby placing hanger nails in double shear. Installed cost of the roof was 36 cents per square foot, and estimated labor savings ran as high as 30 per cent. For further information write to the Douglas Fir Plywood Assn., Dept. C&E, 1119 A St., Tacoma 2, Wash., or use the Request Card at page 18. Circle No. 151.



Case history

Turkish contractor gains with engineering testing

When Turkish contractor Kadri Veziroglu, of Ankara, was awarded a contract to build a NATO air base near Izmir, he was unaccustomed to the engineering testing prescribed by the Ministry of Air. Specifications called for rigid testing of all soils, concrete, and asphalt on the project.

The knowledge gained on that job stood him in good stead when later



Concrete core testing was one of the methods used by Turkish contractor Kadri Veziroglu to check the quality of his mix.

he won a contract that called for an \$8½ million highway to be completed in six months. As a result of testing, aggregate in the vicinity of the job site was found to be as good as that obtainable many miles away, saving him a considerable sum in lower transportation costs. In addition, he was able to run cylinder and cube testing on the concrete being supplied to him by 25 subcontractors.

For further information about engineering testing instruments write to Soiltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 170.

Brunner & Lay opens plant

Complete facilities for the manufacture and servicing of drill steel have been installed in the new Sacramento, Calif., plant of Brunner & Lay, Inc., Franklin Park, Ill. The plant is located at 7500 14th Ave.

Claude Thomas will be superintendent, and Wayne Banks, sales engineer, at the new plant, where large stocks of carbide Rok-Bits and allied air accessory tools will be maintained.

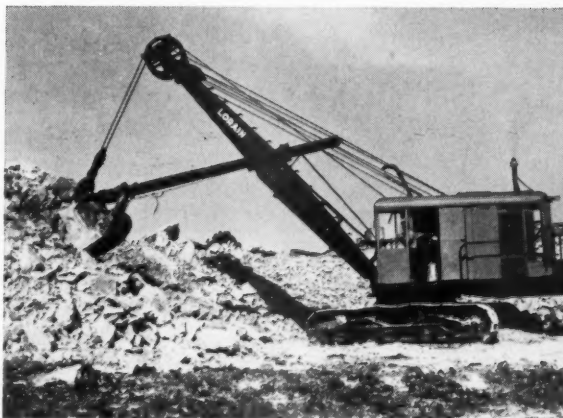
← For more facts, use coupon or circle No. 360

on Caterpillar

Cat Engines mean minimum down time, permitting closer bidding of every job, and their well-known durability can handle the harsh materials and severe job conditions the contractor faces. All of these factors result in lower operating costs than other diesel power plants; and the market value of Cat equipment stays high after normal amortization.

Get in touch with your Caterpillar Dealer today for details—he knows his business, and understands your problems, too.

Engine Division, Caterpillar Tractor Co., Peoria, Illinois, U. S. A. Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.



A Cat D337 Engine powers this Lorain shovel feeding rock to Pioneer portable crushing plant — part of the W. J. Menefee Construction Company's big Missouri Freeway linkage project.

ENGINE POWER BY CATERPILLAR

Why we are a 100% Cat fleet owner today

"When buying machinery or preparing a bid we don't take unnecessary chances. Cat units will pay for themselves in savings alone. Elimination of excessive down time really pays off, and our operating costs are low. Cat Engines are real work horses, producing as rated, day in and day out. Add excellent dealer service and parts availability—even on the old ones—and you have the reason why we are a 100% Cat fleet owner today. We look for realistic value when we buy, and we get it when we specify Caterpillar!"

—E. W. Menefee, president



Engine Division Dept. CT6
CATERPILLAR TRACTOR CO., Peoria, Illinois, U. S. A.

Send me more information about Cat Engines and Electric Sets for original power and repowering.

- ☐ Have your dealer call for an appointment, as I may be in the market. I understand that I am under no obligation.
- ☐ I am interested in learning more in general about these engines.

Name _____

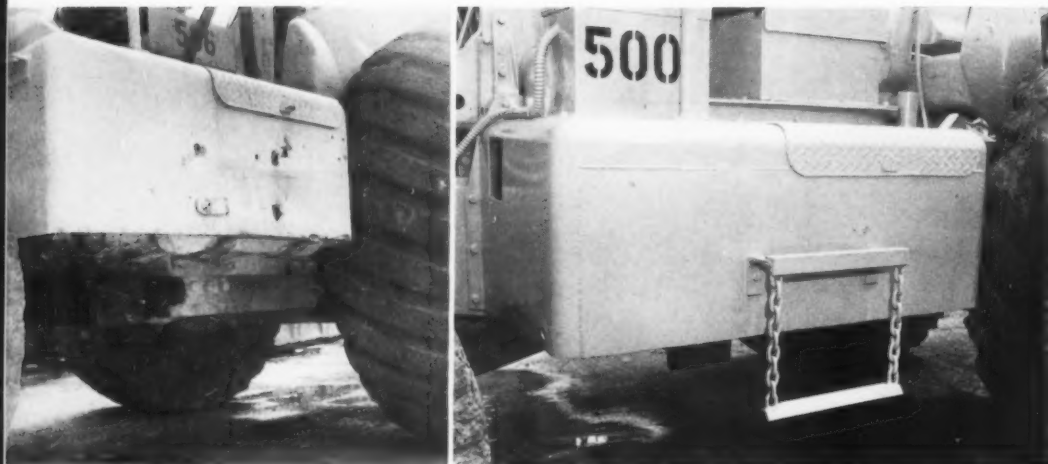
Company _____

Address _____

City _____ Zone _____ State _____



maintenance

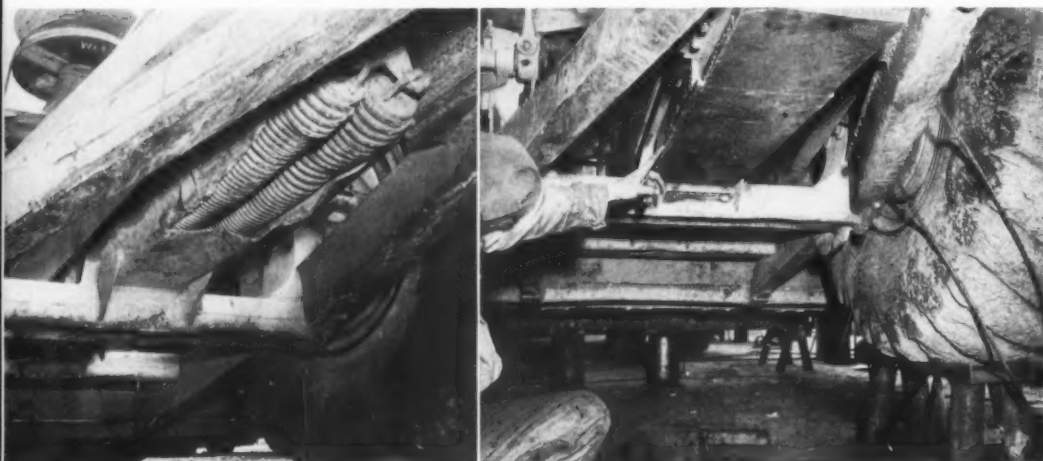


Detail shots of Archibald's prime movers—before and after shop repairs. Instead of replacing steps that have been torn off, crews made a step, suspended by chains, that can swing out of the way instead of breaking off when it is hit. Air tanks have been raised to the top of the compartment for protection from stones. The battery is mounted on top of the compartment in a self-grounding case.



J. O. Archibald, left, owner of J. O. Archibald, Redwood City, Calif., and his equipment superintendent Don Baldwin, right, are always glad to show equipment modifications that have been developed by the firm. Some of them are shown on these pages.

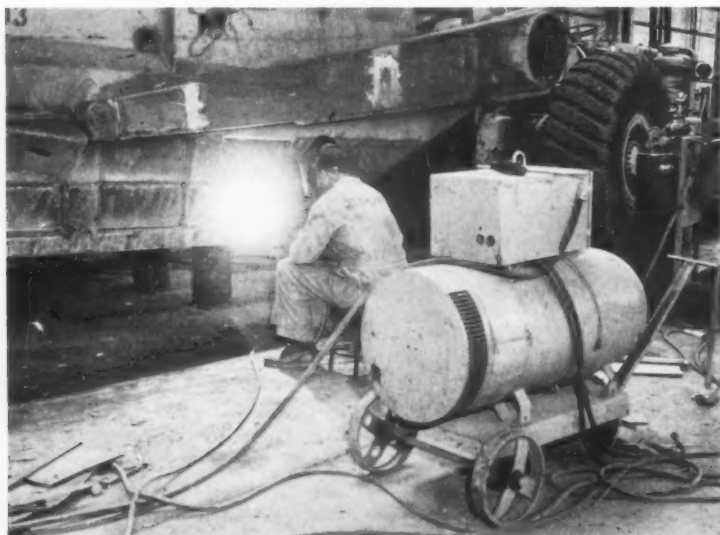
Overhaul in thiont



Gate return springs in the rear pushbar of the scrapers get additional protection in the shop. A cover is fabricated of 3/4-inch steel, which is held in place by a few cap screws. This makes it possible to remove the cover for servicing. In a test, the entire weight of the scraper was allowed to hit the guards. Cover and springs were undamaged.

**Crews modify rigs
to give them strength,
and a longer working life;
manufacturer interested
in some of the changes**

by **RALPH MONSON**
field editor



Victor alloy No. 1 and a Lincoln welder are used to build up the hard-facing on the front parts of the scraper bucket. A heavy bracing plate has been welded between the body and the sheave and cable guards to deflect rocks.



On close inspection, the hard-facing shows up as globs. When the machine starts to work, spaces in between fill with dirt, and the wear will be dirt against dirt. Note countersunk holes in the routing bit moldboard and the nuts on the inside.

CONTRACTORS AND ENGINEERS

Rip
are
whe
buck

M
spot
work
of w
Arch
An
dent
izes
"Equ
us w
work
to g
durin
an R
wher
W
shap
man
in th
the s
whic
time
factu
the m
pects
corpe
comin

M
A
made
as th
ready
rigs
and
work
high
Winc
Make
1958,



Ripper teeth, attached by three brackets to the rear of a Michigan 175A tractor shovel are pointed out by equipment superintendent Baldwin. The ripper shanks swing free when the bucket moves ahead. When the machine backs up, the operator can drag the bucket and dig the teeth into the ground.



A Be-Ge hydraulic pump is installed on the front of a Mack water truck to eliminate a big source of trouble: starting and operating the auxiliary gasoline engine for the pump.

It means rebuilding this tractor's shop

Modifying rigs to eliminate trouble spots that showed up during the working season is an important part of winter overhaul work for J. O. Archibald, Redwood City, Calif.

Archibald's equipment superintendent, D. H. "Don" Baldwin, summarizes the firm's thinking this way: "Equipment can only make money for us when it works, and it can only work when the sun shines. We aim to get it in the best possible shape during the rainy season so that not an hour of working time is wasted when we get out on the job."

When Baldwin says "best possible shape", he means better than new in many cases. Without making changes in the basic design of the equipment, the shop adds a lot of refinements which mean longer life and less downtime for the rigs. At least one manufacturer has expressed an interest in the modifications, and Archibald expects to see some of the changes incorporated into a few of the forthcoming models.

Modifications correct weak spots

A number of modifications were made on Cat DW20 tractor-scrapers as the shop crews got the fleet of ten ready for the current season. These rigs came to the shop bent, battered, and generally in rough shape after work on the spectacular Dyerville highway cut. (See "Scrapers Are Winched Up 62 Per Cent Grade to Make Big Highway Cut", C&E, May, 1958, pg. 14.) The rigs had been work-

ing double 10-hour shifts in very rocky material. And three of them had operated over 8,000 hours before the pan or crankcases were opened up. Track rollers and idlers, however, seldom had lubrication troubles to cause downtime.

This job again demonstrated the trend toward using big tractor-rippers and big push-tractors teamed with tractor-scrapers to move rock—a job usually done by shovels and "Eucs". They got the job done, but the scrapers had taken severe punishment in the rock.

Fuel-tank bottoms on the right side of the tractors were badly dented. The air tanks on the opposite side were bent and knocked loose. Steps had been torn off the sides of the tractors.

Causing even more trouble during the season's operations were certain integral parts of the scrapers. The exterior guards for the gate cables and sheaves were bent and squeezed by rocks until they damaged rather than protected the cables. Gate return springs in the rear pushbar were bent and damaged.

Routing bits and moldboards at the lead edges of the pans just couldn't take the abrasion and impact that resulted from digging rock. They quickly wore out, or else were knocked off as the bolts sheared. The lower portion of the pan sides near the front were practically worn through by rock pieces entering or leaving the

(Continued on next page)



The pump powers a hydraulic motor which turns the water pump on the side of the truck. Standard front tires from DW10 tractors, replacing the truck duals, carry less dirt from jobs onto highways.



The rear of one of the water trucks shows some other innovations made by the shop crews. The valve is air operated, and the rig has a high-level distributor nozzle for wetting down haul roads. The heavy manifold across the back serves as a rear bumper.



Overhead cranes do all the lifting in the shop. One of the cranes is lifting one side of a D9 so that the track can be removed.

scraper. The machines were obviously doing heavier work than they had been designed to do.

Baldwin had spent the season right on the job, nursing these machines day and night, and he knew just what was wrong with each one. More than that, he knew their general weaknesses—the critical points that had given the most trouble. Even more important, he had worked out modifications to improve the weak points. When the time came for overhaul, the shop crew went through the entire spread with a reconditioning and modification program that actually put the machines back in better-than-new condition.

A few of the modifications

The dented fuel-tank bottoms were cut out, and the 10-gage steel tank bottoms were replaced with $\frac{3}{8}$ -inch plate reinforced on the inside with longitudinal 5x5-inch steel beams.

The air tanks on the left side of the tractors were raised to the top of the compartment, remounted with flexible connections, and protected by a heavy bottom welded into the compartment. To do this, crews had to remove the battery. But this also had its advantages.

Since many batteries had been damaged by rocks, a new self-grounding steel battery case was redesigned, rebuilt, and installed on each machine. The new case, which bolts to the top of the air tank compartment, completely encloses the battery. The heavy steel cover locks into place and to the handrail with a padlock. This not only protects the battery from physical damage, but also prevents loss by theft. Yet both the battery and the air tanks are readily accessible for servicing.

The problem of the steps getting knocked off was solved by another modification. Baldwin came up with a step suspended on two chains so that it can swing out of the way instead of breaking off when it is hit.

Design new guards

To protect the big gate return springs in the rear pushbar of the scrapers, the maintenance crew installed protective covers fabricated in the shop from $\frac{3}{4}$ -inch plate. These covers and the springs suffered no damage when the scrapers were test-dropped and the entire weight of the scraper hit the guards, yet they can be quickly and easily removed to service the springs.

Where the old sheave and cable guards projected straight out from the scraper sides, Archibald's crew welded heavy bracing plates at an angle between the scraper body and the guard. These not only strengthen the guards, but also serve to deflect the rocks which cause the damage to the scraper.

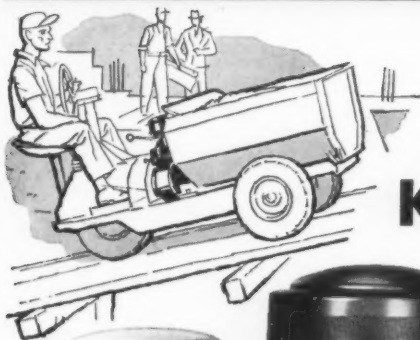
Among the primary trouble areas were the lead edges of the pans and the lower parts of the pan sides. Here Baldwin and his crew cut away the



A workman points out the tapered plates, which protect the gate cables and sheaves, and deflect the large rocks that cause most of the damage to a machine.

KOHLER ENGINES

4-CYCLE SHORT-STROKE AIR-COOLED



MODEL
K330



MODEL
K660

- Efficient and reliable
- Short-stroke means more usable power, cuts engine friction
- Hot spark assures quick, easy starting in all weather
- Balanced crankshaft — ball bearings reduce vibration
- Rugged construction—plenty of load-lugging power
- Kohler engines will do the jobs for which they are recommended

Send for 28-page illustrated booklet. **FROM 3 TO 24 H.P.**

KOHLER CO. Established 1873 KOHLER, WIS.

KOHLER OF KOHLER

Enameled Iron and Vitreous China Plumbing Fixtures • Brass Fittings • Electric Plants • Air-cooled Engines • Precision Controls

For more facts, use Request Card at page 18 and circle No. 361



A small Snap-On impact wrench, with adjustable torque for bolts from 1/4 to 1/2 inch, comes in handy as one of the shop crew works on a scraper.

worn sheets and replaced them with new metal. Then to provide further protection of the vulnerable areas, crews hard-faced them both inside and outside to minimize wear by abrasion.

This hard-facing was done in a unique manner with a Lincoln welder and Victor alloy No. 1 hard-facing welding rod. The hard metal was applied as a series of globs spaced roughly an inch apart over the area to be protected. "When the machine goes to work," explained Baldwin, "the spaces between these globs fill in solid with dirt. After that our wear is primarily dirt against dirt, and the metal lasts a long time."

Heavier routing bits

To obtain heavier than standard routing bits and routing bit moldboards, Archibald ordered some to his own specifications. They are made of 1 1/4-inch plow steel, which permits the bolt holes to be countersunk to receive and protect the heads and nuts of the bolts. For further protection, the bolts are installed with the nuts on the inside so that there is practically nothing exposed to catch on rocks.

As a further protection for the bits, pieces of heavy plate were welded to the scraper sides, above and behind the routing bits in such a way that the bit bears up and back against the plates. This is designed to prevent shearing of the bolts which attach the bits to the moldboard.

These are some typical examples of the type of modifications included in the shop overhaul. While the machine is in, bearings are rebushed and tractor engines, transmissions, and final drives are overhauled. In fact, any part which has not been recently overhauled or replaced in the field is thoroughly reconditioned.

Believing that operator comfort, ease, and pride are directly related to production and efficiency, Archibald's shop leaves nothing undone which will help the operator to do a better job in the field. Steering mechanisms are reconditioned, pedal linkage is checked and adjusted, seats are repaired, and damaged instruments are repaired or replaced.

(Continued on next page)

Inside the shop, equipment lined up for repair includes a Michigan 175 A tractor shovel, a D8 tractor, and a Mack water truck. Overhead electric cranes of 5-ton capacity do all the heavy lifting.



On this site-development job for Tietz Construction Co., Turner-Meyerholtz Co., Lancaster, California, utilized the extra push-power of a 150 hp Adams 660... both as a "blade" and as a pusher. Grader push-loaded one 7-yd. D Tournapull® terraced lots, graded house pads, smoothed roads in new 70-home subdivision. In unstable sand, "660" cut full blade loads in 3rd gear (to 4.7 mph)... developed total power for push-loading in 2nd (to 3.3).



Power to PUSH

dirt...scrapers...almost ANYTHING!

Ask any Superintendent or Foreman who has one of these graders. He'll tell you, "The Adams* 660 is the most powerful grader built!" And by power he means *work-power*... the ability to push scrapers, and stalled equipment... to blade deeper, push more dirt, roll it faster... to move more pay-yards daily than any other grader offered for contractor work.

More speeds for full-power work

While engine horsepower is important, it's *usable power on the blade and push-block* that counts most. You'll find that both the standard Adams 660, and POWER-Flow* 660 (with torque converter) put more of your engine-power to work.

The 150 hp "660", with conventional transmission, can provide up to 15 power-speed combinations... more than any other make of grader. You get more speeds at which full engine-power can be used for working, maneuvering, or traveling. Often an Adams can work at practical, me-

dium speed — using maximum power — where other graders must either shift to lower gear at lower speed, or reduce throttle and size of load.

"660's" higher top speeds for traveling (to 26 mph) and for backing-up (to 13.7 mph), save time for actual blading and dirtmoving. And 3 (optional) creeper gears, give you extra "muscle", precision, and shock-protection, at extra-low speeds.

On the 190 hp POWER-Flow 660 model, power is delivered thru 3 to 1 torque converter. Power and speed are automatically balanced all thru the range between 0.0 and 27.4 mph. Its torque-converter drive gives you the effect of an *infinite* number of gear ratios... just-right work-power for every job.

Maximum torque delivered to wheels

Adams 80 to 190 hp machines deliver a greater proportion of engine-power to tandem wheels. All gears and shafts in transmission, final drive, and tandems, turn on anti-

friction bearings. More thrust is made available for pushing bigger loads... for working faster.

Applies work forces accurately

Your operator applies grader power blades faster, more accurately with instant-acting Adams controls. Operator has precise control because power-driven mechanical controls operate at constant speed — regardless of the number of controls in use. Moldboard is easily set, locked firm and held steady on Adams sturdy one-piece "wishbone" frame. Anti-friction bearings in control linkage make adjustment easy and accurate. You get a smooth, exact cut on a fine finish grading.

Ask us to show you how "660" can outproduce, outgrade, and outrun any other grader. How, size for size all six Adams models (60 to 190 hp) can move more dirt... move it faster... and at lower cost than any comparable grader. And you get your choice of GM or Cummins engine on the 5 larger models.

*Trademark G-1542-DC



LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Request Card at page 18 and circle No. 362



Don Baldwin uses the GE mobile radio to talk to one of his servicemen in the field. This is a Dodge 1-ton pickup used by field mechanics. The outside speaker at the far side of the cab allows men to hear calls even when they are working on a rig. The Beebe winch, just behind the cab, operates a rear-mounted A-frame.

(Continued from preceding page)

Lastly, before leaving the yard, every machine is carefully steam-cleaned by a Malsbary steam cleaner and painted a gleaming new Caterpillar yellow. When an operator steps on the machine the first day in the field, he has a rig which in looks and feel is practically as good as new, and which in operation should prove even better.

One-man operation

In a sense, the construction firm of J. O. Archibald is a one-man operation because its sole owner, James

Olaf "Ole" Archibald, keeps a finger on every phase of the operation. Starting in business for himself at the age of 17, Archibald bought a Fordson tractor with a plow and cultivator and started contracting work in the orchards area near his home.

Progressing from wheel tractors to crawlers, he branched out into the earthmoving field about 1930, when he undertook the grading of some salt crystallizing ponds for Leslie Salt Co. This was tricky work in the soft, marshy areas ringing the south end of San Francisco Bay, but Archibald modified his machines to fit the conditions and did the work successfully. He still keeps a spread of equipment working in the salt ponds a good share of the time.

In 1942, Archibald joined with Ed Sondgroth of Sondgroth Bros., Mountain View, Calif., to build a section of the Alcan Highway. Since that time his rigs have worked on many county roads, state highways, airports, guided-missile sites, and residential subdivisions. The firm has taken part in many large jobs, like the Dyerville highway project last year, in which an entire spread of equipment was rented to the general contractor for the work.

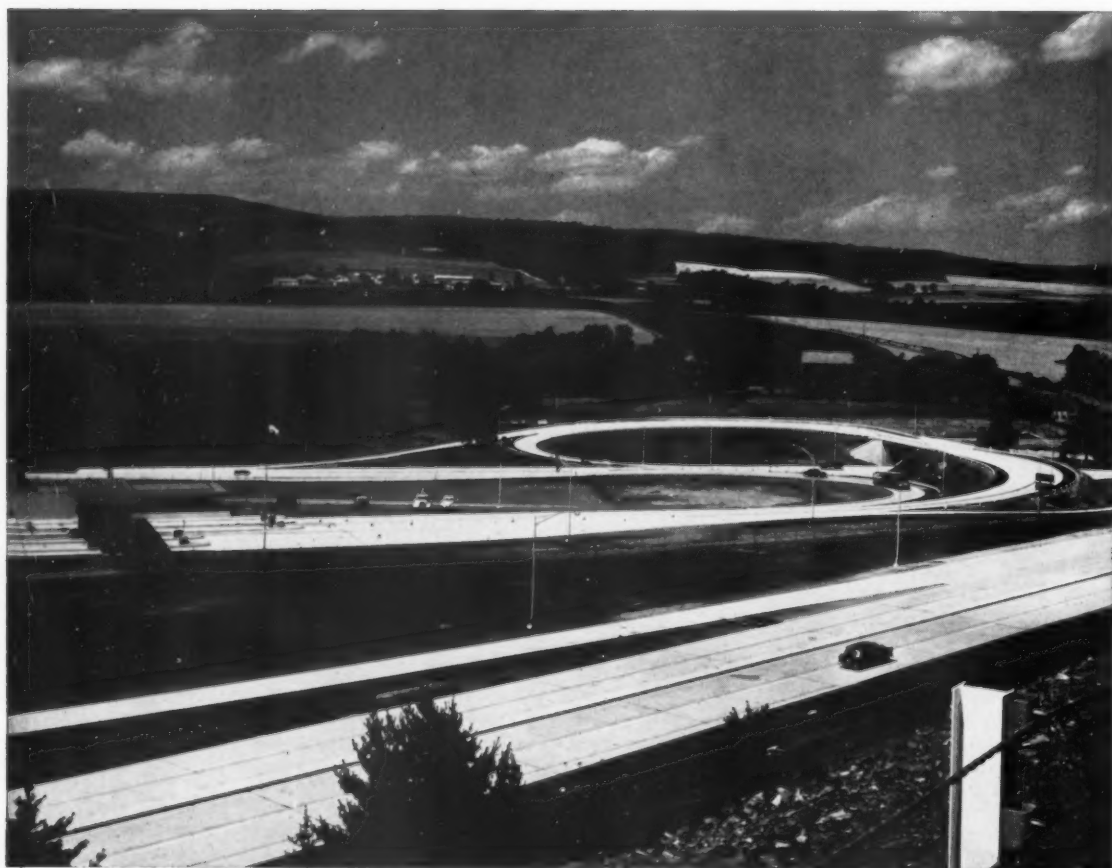
Archibald, now a long way from his modest beginnings, is prominent among today's West Coast earthmovers. His present fleet, in addition to the ten DW20's, includes some 28 crawler tractors ranging from a Cat D9 down to an International TD-9. There are four DW-10 scrapers as well as a number of Cat 60, 70, and 80 scrapers for the tractors. Two P&H shovels with interchangeable hoe and dragline attachments handle shovel assignments, while two Michigan 175A tractor-loaders provide additional digging and loading capacity.

Several sheepsfoot rollers, a Super Compactor, several Be-Ge land levelers, three big water trucks, and the usual array of smaller and auxiliary equipment round out the fleet.

Archibald is a member of the San Mateo County fire department and the Redwood City fire department, and his equipment responds to many calls. His men aid state and federal crews in fighting forest fires, not only in San Mateo County but throughout the area, and assist the fire fighters by delivering water in their tank trucks.

To round out his construction operation, Archibald has gathered a few key people into his organization. These include manager E. W. Kelley, estimator W. G. Ebright, bookkeeper Esther Hanson, equipment superintendent Baldwin, and service superintendent Lynn Drennon. Many of his workmen have been employed a number of years, and Archibald keeps as many as possible on the payroll the year round.

Don Baldwin, equipment superintendent, has been in construction some 20 years, working as an opera-



Largest Line of Steel Products for Highways

Here is a partial list of the steel products for highway construction you can get from Bethlehem Steel. In fact, you can buy any construction steel—heavy or light—from this single source. And all our road steel products meet the standards set by state highway departments and testing laboratories.

Safety Beam Guard Rail
Cable Guard Rail
Steel Guard Posts
Formed Steel Bridge Floor
Bridge Railing
Steel Roadway Curbs
Dowel Units
Bar Mats
Welded Fabric
Road Center Strip
Reinforcing Bar Accessories

Fabricated Reinforcing Bars
Nails and Form Wire
Wire Fence
Steel Fence Posts
Wire Rope and Wire Rope Slings
Cables for Suspension Bridges
Hollow and Solid Drill Steel
Digging Bars, Form Stakes
Corrugated Roofing and Siding
Galvanized Culvert Sheets

Steel Pipe
Structural Steel Shapes
High-Strength Bolts
Rivets, Spikes, Bolts
Timber Bridge Hardware
Rock Bolts
Mayari R High Strength Steel
Steel Sheet Piling and H-Piles
Hook-Bolt Dowels for
Concrete Slabs

Fabricated Structural Steel for Buildings and Bridges

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL



For more facts, use Request Card at page 18 and circle No. 363

tor, mechanic, foreman, master mechanic, and job superintendent. He can operate any one of the machines and supervise a project, as well as maintain the equipment.

On his regular crew, Baldwin has five heavy-equipment mechanics, service superintendent Lynn "Red" Drennon, and two service men. Additional mechanics and service men are hired, when necessary, to man the field shops on big jobs. This department does an outstanding job of servicing equipment. Drennon sees to it that equipment is properly serviced, and he has the knack of discovering breaks, cracks, or potential downtime troubles when a machine is being serviced. By close cooperation between Don Baldwin and Drennon, and by the use of radio for communication, these departments eliminate much downtime.

Well equipped shop

The big shop which is home for Archibald's equipment was designed and originally used as a trailer manufacturing building. The 50x300-foot structure is equipped with two 5-ton overhead electric cranes which travel the full length of the shop. The well lighted and ventilated room makes an overhaul shop that is almost ideal. Offices are located in an adjoining portion of the building.

Field servicing and field maintenance are also important. On the jobs, two Freuhauf 35-foot vans provide shop and warehouse facilities. Vans are set on each side of a 40-foot-wide concrete slab to provide a working area. Trussed rafters covered with galvanized iron roofing protect the area from rain and sun.

Every effort is made to provide power tools and labor-saving devices for mechanics and service men. The field shop carries its own Kohler electric plant, which is equipped to start automatically when power is needed. This is really an auxiliary, used only when commercial power is not available or when such power is disrupted.

Several Quincy air-compressor sets follow the field crew to supply air for impact tools which are used to speed up the work or make it easier. Small Snap-On impact wrenches with adjustable torque are particularly handy for lighter work, while a heavy-duty Ingersoll-Rand impact wrench handles the tough work. Both gasoline and electric-powered Lincoln welders are always on hand, together with adequate supplies of welding rods.

Field service trucks

Field mechanics use well equipped field service trucks. These Dodge 1-ton pickups carry a rear-mounted A-frame operated with a Beebe hand winch. An oxyacetylene welding set is mounted in a special rack on one side, just behind the cab. Built-in steel cabinets carry tools, bolts, commonly used parts, and other supplies.

A General Electric two-way mobile radio on each service truck has an outside speaker. This speaker is loud enough so that a mechanic can hear it even above the noise of a running machine.

(Continued on next page)

Reconditioned machines are lined up in the yard, ready for work. Tires are not replaced until they are worn out or the job is ready to start. New tires—a big investment—are never left on idle machines.



Load-out more per shovel

In the loading zone,
Tournapull® Rear-Dumps
reduce shovel waiting,
cut load-time . . . handle
more loads per day

You'll load-out more per day, when your shovels load into LeTourneau-Westinghouse Tournapull Rear-Dumps. These husky haulers speed your load-haul-dump-return cycle in many ways. Here's how Tournapulls boost output by saving time in the loading zone.



Faster spotting at shovel
Rear-Dump eliminates slow back-and-forth maneuvering to spot, while your shovel sits idle and waiting. Tournapull operator can swing prime-mover 90° . . . make sharp turns to maneuver quickly into best loading position. Tournapull's quick maneuverability adds time for extra payloads . . . saves preparation of turn-arounds . . . shortens cycle.

Turns 180° in tight quarters
With 90°-turn, geared electric-steer on kingpin, your Tournapull opera-

tor can make fast, tight U-turns at the shovel . . . in dead-end cuts, in narrow pits, in tunnels, on restricted benches. This frequently saves long, slow back-in . . . eliminates delays for shuttling into tight positions. A 22-ton model "C", for example, can turn 180° to spot in a dead-end cut less than 21' wide. All L-W haulers make continuous U-turns in less than their own length. And with body "up", they can turn 180° in 25% less than their length.

Big, easier-loading bowl

Rear-Dump's broad bowl is an easy-to-hit target—one that lets your shovel operator spot dipper fast, for quick dump without spillage. He swings the bucket thru bowl's low rear entry in a smooth, continuous arc . . . there's no time wasted on jerky up-down-up-and-out motions.

The rugged triple-strong body is so tapered that it takes shock loads easily, quickly builds a protective bottom load cushion. Because long drive-shaft is eliminated, unit also gives you an exceptionally low center of gravity for safe, fast hauling.

Steady, low-cost earthmoving

Tournapull Rear-Dumps take on full payloads fast, maneuver easily, haul steadily on or off roads, and dump clean in seconds. They're easy to operate and extra safe on soft fills and over-bank dumps . . . on steep hills . . . on narrow, winding roads. Tournapull's simple construction cuts maintenance downtime, reduces cost per ton.

Get all the story . . . it's important to you! Call or write for complete details on Tournapull Rear-Dumps.

R-1461-DC-1



Exclusive . . . Tournapull steering

Only Tournapulls give you geared, electric-powered, 90° kingpin steer. At touch of a dashboard switch (or movement of steering wheel on 35-ton unit), an electric motor pivots prime-mover on the kingpin. Safety limit switch stops turn at 90° angle.

Three profit-building sizes

	Model B	Model C	Model E
Ton Capacity . . .	35 net tons	22 net tons	11 net tons
Bulk Capacity . . . (heaped 1:1)	31 cu. yds.	22 cu. yds.	10.5 cu. y.
with tailgate	33 cu. yds.	24 cu. yds.	11 cu. yd
with sideboards . . .	not offered	28 cu. yds.	not offered
with tailgate and sideboards . . .	not offered	29 cu. yds.	not offered



LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Request Card at page 18 and circle No. 364



Parts are conveniently stored in the shop. The bank of bins has drawers that ride on rollers and are designed to carry relatively heavy loads. The bins were salvaged from an abandoned commercial deep-freeze operation.

(Continued from preceding page)

To provide adequate power for the radio, lights, and small electric tools, each of the service trucks contains a Leece-Neville generator and converter. The truck engine drives the generator, which provides electricity for the engine and for auxiliary use. For the auxiliaries, the current from the generator is fed through a rectifier and then to a Trencor transformer, from which it emerges as current suitable for lights and the electric tools.

If a mechanic knows the details of a repair job in advance, he can usually bring required parts and make

any field repair in a single trip without the aid of another mechanic.

Archibald's two lubricating and service trucks are models of efficiency. The newest, carried on a Dodge 3-ton truck, is equipped with Leece-Neville generator and transformer such as those on the mechanics' trucks. On the lube truck, the generators also supply power to operate electric motors for the three pumps which transfer diesel fuel, gasoline, and water from the service truck to the equipment being serviced.

The lube truck carries a 950-gallon tank partitioned off for 800 gallons of diesel fuel and 150 gallons of gasoline. Along the two sides of the truck are five 90 and 150-gallon rectangular oil and grease tanks, each fitted with a Lincoln dispensing pump. The truck also carries a 90-gallon stainless steel tank of water for drinking and for equipment radiators. A handy valve and fountain make it convenient for workmen to get drinks while their machines are being serviced.

Convenient compartments in the truck carry filters, tools, and other supplies. Under job conditions, two men can completely service a DW20 or similar piece of equipment with this rig in seven minutes.

Spares save time

This contractor has worked out a number of ideas for shortening downtime when equipment runs into trouble in the field. For example, one right and one left rear wheel for the DW20 scrapers are kept mounted and ready to install. In case of a flat tire or burned-out brakes, the entire wheel is replaced in less than half an hour. Replacing a tire or relining brakes frequently takes half a day or more.

One spare DW20 tractor without scraper is kept on hand, since experience has shown that the tractor is more likely to be down than the scraper. In about an hour and a half, the field crew can change a scraper from one tractor to another. The repair of an engine or transmission usually takes half a day or more.

Equipment distributors and the suppliers of fuel, lubricants, and tires assist the field maintenance and service crews in many ways. Goodyear Tire & Rubber Co. usually keeps a tire service truck on the larger jobs to make quick tire changes or repairs. Fuel suppliers usually have a tank wagon on hand to fill all the rigs at mid-shift or between shifts. Archibald usually uses Union Oil Co. fuels and Quaker State lubricants.

Peterson Tractor & Equipment Co., San Leandro, supplies and delivers Cat parts to the crews wherever they are. Peterson also handles the rebuilding of track rollers and the supplying of special as well as standard parts.

Archibald's water trucks are typical examples of the ingenuity of the shop

VULCAN

A No. 50-C SUPER-VULCAN Hammer Driving "H" Beam Piling and Sheet Piling

Here, as in many thousands of jobs all over the world, VULCAN Pile Driving Hammers and Extractors are doing their work quickly, efficiently and economically. On your next job, specify VULCAN... the name you can depend on for the finest in pile driving equipment.



VULCAN IRON WORKS INC. 327 North Bell Avenue, Chicago 12, Illinois

Manufacturers of Pile Driving Hammers and Pile Extractors Since 1852

For more facts, use Request Card at page 18 and circle No. 365

crew. One of these is a big Mack diesel truck with 3,200-gallon tank. Since starting and operating the auxiliary gasoline engine for the pump were always a source of trouble, the contractor installed a hydraulic pump and motor to power the water pump.

A front power takeoff was designed and attached to the front of the truck engine to drive a Be-Ge hydraulic pump mounted in front of the truck engine. Hydraulic hoses conduct the fluid under pressure to a 35-hp hydraulic motor coupled to the water pump on the side of the truck. A single valve operated by a lever from the cab provides the control.

On this same rig, this contractor has found that single instead of dual rear tires carry much less dirt from jobs onto streets and highways. He has, therefore, replaced the regular rear duals with the standard front tires of DW10 tractors. These can be mounted on standard 10-hole Budd wheels with no modifications of the truck's tandem axles.

Some of the modifications being made in Archibald's shop may show up on equipment heading for dealers' lots in the not too distant future. But it is a good bet that by the time they do, Archibald's crews will have worked up more equipment modifications well worth the attention of any contractor.

THE END

Case history

Contractor cuts costs with concrete carts

Seven Model 15A Prime-Movers kept concrete placement costs down in the construction of a combination garage and drive-in theater in Dover, N. J.

The machines, used by the Dunwell Concrete Construction Co., made continuous runs of 120 to 400 feet. Charged by transit mixers, they had to climb a 20 per cent ramp to reach the working area.

One of the largest continuous pours was 128 cubic yards in 7 hours, using four 15A's. The run on this section was over 300 feet from truck to pour. All of this section was 2½-inch slab.

The over-all concrete cost figure on one 2,300-yard section was estimated at \$9.37 per cubic yard.

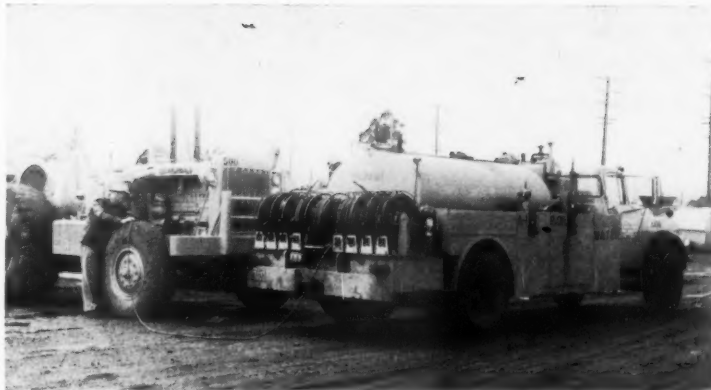
Total concrete placed on the job by the seven machines was approximately 200,000 yards. The units were also used for clean-up work, as well as for the delivery of other materials to various points on the job.

For further information write to The Prime-Mover Co., Dept. C&E, Highway 61E, Muscatine, Iowa, or use the Request Card at page 18. Circle No. 168.

Armco Steel Corp., National Supply merger

Armco Steel Corp., Middletown, Ohio, steel producer, has effected a merger with the National Supply Co., Pittsburgh, Pa., manufacturer of oil-field equipment. Armco will operate the business of National Supply under the same name, as a subsidiary of Armco.

The field lube rig, mounted on a Dodge 3-ton truck, carries just about everything needed for service. Diesel fuel, gasoline, water, oils, and greases are dispensed through nine hose reels. Oil and grease tanks are equipped with Lincoln dispensing pumps. A Quincy air compressor supplies air.



B Tournapull is available with 300 hp Cummins or GM power-plant; or, as torque-converter "B", with 335 hp Cummins engine.

This scraper loads more pay-yards...faster.. because it makes better use of its "horses"

Compare BIG scrapers available today, and you'll note that most of them offer engines in the 300 horsepower range. This "flywheel hp," however, is only *part* of the scraper power-picture. *More* important... as far as load size and loading speed is concerned... is how much of that power is *wasted*, and how much is actually *used*.

Consider, for instance, the 300 to 335 hp LeTourneau-Westinghouse B Tournapull® with 27-yd Fullpak® scraper. This machine gets *bigger loads faster* because it makes *fullest possible use* of power — its own, and that of its pusher. Here's how...

Low, wide bowl cuts power loss

Its Fullpak scraper design, for instance, is an important power-saver. Low and wide, it lets dirt flow back into the bowl almost on a straight

line. With blade in ground, Fullpak floor has a rise of only 1°, front to back. That means that more prime-mover power can be concentrated on *pulling and cutting*, less on *lifting*.

Because Tournapull's push-block is low, maximum pusher-thrust is directed squarely behind the blade where it's needed. Pusher-plate, push-block, and scraper-blade "line up" for concentration of maximum power. Direct line of push also eliminates "humping"... steadies the scraper for easier loading and more accurate grading.

Construction details of the "B" also cut power-waste, because they reduce friction-loss. Heavy-duty roller bearings, for instance, are used throughout. Welded steel construction eliminates force wasted in twisting and distortion. Tournapull's

simple design eliminates a lot of heavy hardware, whose dead-weight robs you of power. And drive-train is short-coupled, efficient... doesn't waste power in detours between engine and work application.

"Electrics" use hp only when needed

Electric controls are horsepower savers, too. Instead of continually dragging on your engine, as hydraulics do, current for Tournapull scraper controls is generated only when needed. And the *instant* response of "electrics" eliminates wasteful "build up" of power for operating scraper controls.

Look at the *whole* power-picture when you compare scrapers. For complete information on the LeTourneau Westinghouse B Tournapull®, see your nearby LeTourneau Westinghouse Distributor.

*Trademark BP-1748-DC.



LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Request Card at page 18 and circle No. 366



Company equipment procedures keep huge fleet in operation

Down-to-earth maintenance and equipment policies of J. A. Jones eliminate excessive record keeping

Behind the complex work of one of the nation's largest contracting organizations—work that includes building, industrial, and heavy construction throughout the world—is a simple and successful policy for equipment and maintenance.

The Charlotte, N. C., firm, J. A. Jones Construction Co., founded in 1874 by James Addison Jones, today does in excess of \$200 million worth of work each year by taking jobs that vary from a \$15,000 building addition to a multimillion-dollar hydroelectric project.

Stress flexibility

The organization is unique in many ways. It does not rely on any fixed system, set of regulations, or rule books in taking care of its equipment, as do many large construction companies. To a great extent, it depends on its men and their opinions. President and chief executive Edwin L. Jones, son of the founder, assisted by executive vice presidents Emil J. Kratt and Edwin L. Jones, Jr., and treasurer John S. Stafford, are the top men in the company. Around them is a nucleus of carefully selected officials and superintendents who have years of experience with the firm and its policies.

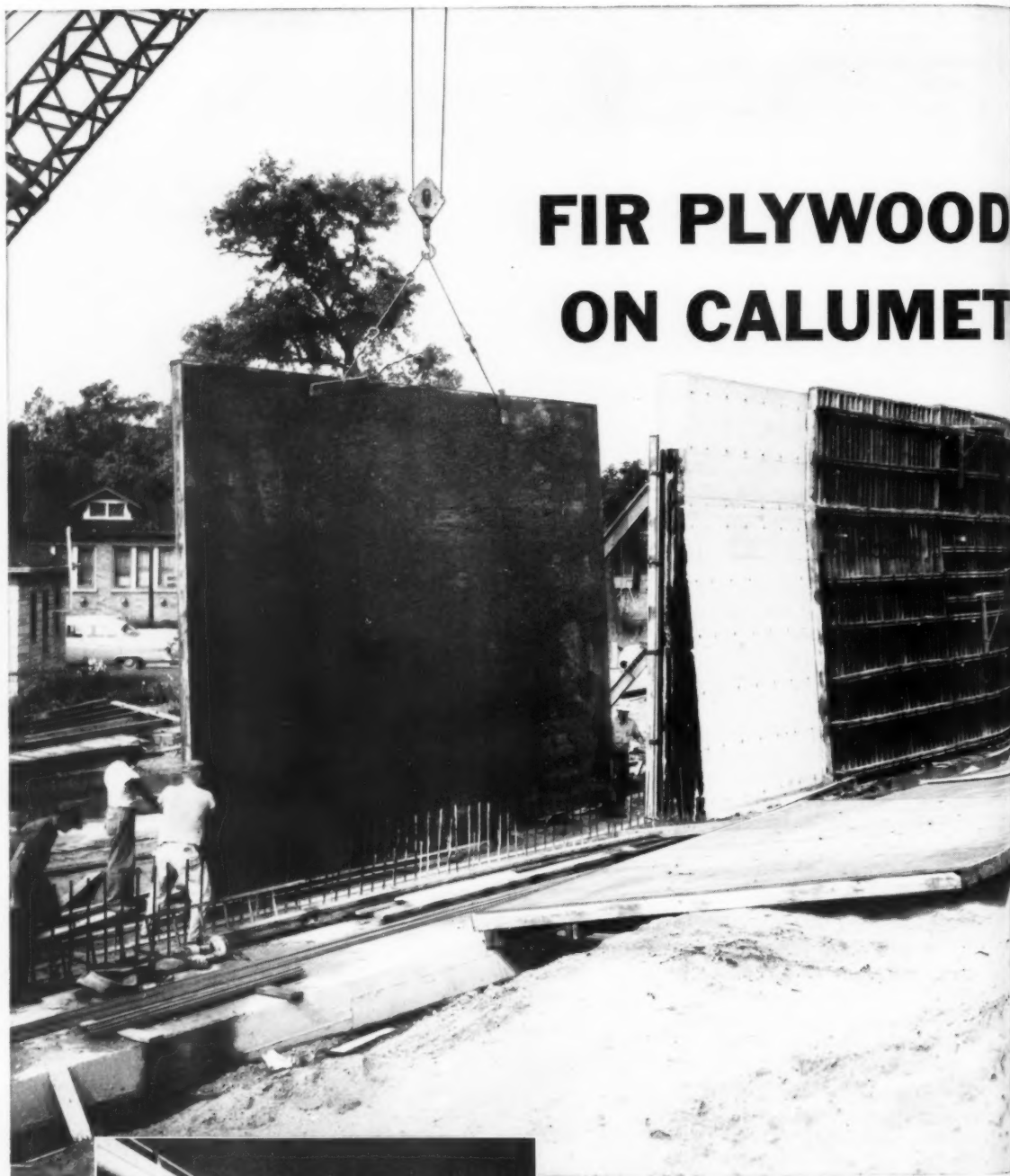
Because of this, the company has been able to maintain seven branch offices throughout the country, plus overseas offices. The domestic branches are located in Atlanta, Ga.; Shreveport, La.; Nashville, Tenn.; Seattle, Wash.; Berlin Heights, Ohio; and New York, N. Y., which has two offices.

Each of these area offices, headed by a vice president, has various functions and responsibilities. The two New York offices handle all the procurement of materials and equipment for foreign projects. The Seattle office handles all the construction activities, whether it be building, industrial, or heavy, throughout the north-west section of the country. The remaining offices, as autonomous units, have the responsibility of obtaining contract awards for building construction. The estimating and bidding on buildings is completely handled by the area offices; all heavy-construction projects are estimated and bid from the Charlotte headquarters.

Coordination of the company's 3,000 pieces of heavy-duty equipment is handled at the home office with an

efficient and uncomplicated system. Duplicate sets of equipment cards list the make, type, and capacity of each machine; the code number assigned by the company; the purchase date; and the purchase price, including the cost of all accessories. One set is maintained in alphabetical and numerical order so that the amount and location of every machine in an equipment category can be determined.

The second set of cards—also in



FIR PLYWOOD FORMS ON CALUMET SKYWAY

Big prefabricated fir plywood form sections helped cut costs, speed work on 8-mile long Calumet Skyway.

CALUMET SKYWAY TOLL BRIDGE LOCATION
West end of Indiana Toll Road to downtown Chicago
COORDINATING ENGINEERS:
De Leuw Cather & Company
CONTRACTORS FOR FORMWORK:
R. R. Anderson Co., Chicago
Arcole Midwest Corp., Skokie, Ill.
M. J. Boyle & Co., Chicago
J. M. Corbett Co., Chicago
Kenny Construction Co., Skokie, Ill.

CONTRACTORS AND ENGINEERS

In the shop at the Berlin Heights, Ohio, branch of J. A. Jones Construction Co., a Rex paving machine and three Euclid rubber-tire tractors get repairs.



alphabetical and numerical order—is filed in project groups. This set allows the company to check quickly the exact amount and type of equipment on a particular project, and this information is important in determining the equipment available for shipment as the project nears completion.

This second set of cards also carries the monthly rental fee of the machine charged to the job. Invoices are sent to the projects, but these

are not paid. They serve as billings on the equipment rental, or use, charges. The billings are used only for cost purposes, and they also give project superintendents the charges made to their work so that the unit costs can be calculated.

The only information posted on both sets of cards is the number of the project on which a machine was used. This shows the location of the machine and the site from which it was shipped.

The actual operating costs of equipment on a job—including maintenance and repair costs—are recorded and maintained on the project. The project superintendent or manager is responsible for this record.

Field cost records

At the completion of a project, for instance, the project manager submits a list of the equipment on hand and makes comments on each. If, after checking his equipment cost records, he feels that a certain rig is becoming too costly to operate, he might recommend disposal or a complete overhaul. But the final decision is made at the home office, which has a clearer view of the over-all maintenance picture.

The card filed in the home office shows whether or not the machine has been fully depreciated, and its present worth. A quick check is made to find the purchase price of a comparable machine. These figures, plus an estimate of the cost of overhauling the rig, show whether it is more profitable for the machine to be kept and overhauled or turned in for a new model.

This is not the sole criterion for purchasing new equipment; factors considered in the buying plan are new and more efficient models on the market, job requirements that cannot be met from inventory, and the need for replacing machines that have exceeded their normal working life. The latter is determined by a check of the equipment file; this shows the number of months—not necessarily hours—that the rig has worked on different projects.

Jones does not keep a record of the annual operating costs of every machine; this would involve an unwieldy amount of paper work in the home office and in the field. Instead, the firm relies on the opinions of the project superintendents, the men who actually live with the machines for months at a time.

Field maintenance facilities vary according to the size of the equipment fleet on a job, the length of the project schedule, and the job location. If the project requires a large fleet to work a long time in a remote area, a maintenance shop is usually set up. But if the fleet is of standard equipment and a dealer is located nearby, the company lets the dealer handle the maintenance work. This

MODFORMS SPEED CONCRETING CHICAGO SKYWAY TOLL BRIDGE

GIANT FIR PLYWOOD FORM SECTIONS, as large as 28' x 31', played an important role in keeping work moving at a near record clip on the new eight-mile long Calumet Skyway which links the Chicago business district with the Indiana toll road.

The job features one of the world's longest retaining walls along three of the eight miles. Over 30 feet tall in places, the wall was formed by leap-frogging the big prefabricated plywood form sections. In most instances, forms were built to maximum wall height and simply cut down for shorter walls. Plywood forms were also used for abutments at street crossings and for beams and bridge decks on overpasses.

Plywood was called for in the job specifications for uniformly smooth concrete, but contractors on the job credit plywood's ease of fabrication and handling—coupled with a high number of re-uses (up to 15 or 20 pours)—with holding down costs as well.

All told, over 300,000 square feet of plywood forms were used by the five contractors concerned with pouring walls, abutments and decks.



Rustication lines on walls and abutments were achieved by nailing strips to face of plywood forms.



Fir plywood was also used for forming reinforced concrete beams and deck slabs on entrance ramps.

DOUGLAS FIR PLYWOOD ASSOCIATION

TACOMA 2, WASHINGTON

—a non-profit industry organization devoted to research, promotion and quality control



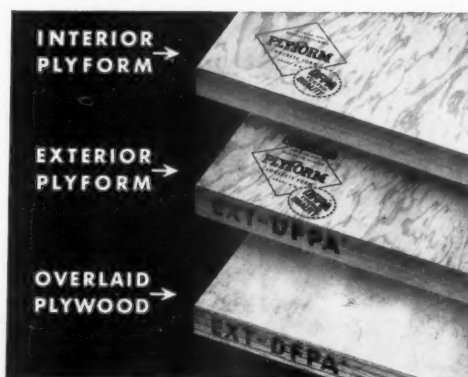
ALWAYS SPECIFY BY DFPA GRADE-TRADEMARKS

Letters DFPA indicate material has been inspected and tested under rigid DFPA-Industry quality control program. Grades manufactured expressly for concrete form work include:

INTERIOR PLYFORM®—standard concrete form grade plywood made with moisture-resistant glue. Gives multiple (10-12) re-uses.

EXTERIOR PLYFORM®—standard concrete form grade plywood made with waterproof glue to give as many as 25 or more re-uses.

OVERLAID PLYWOOD—special panel with hard, glossy, plastic-like fused resin fiber surfaces. Forms smoothest concrete; up to 200 re-uses.



For more facts, use Request Card at page 18 and circle No. 367



In the equipment yard at Berlin Heights, a Gradall, Euclid prime movers, sheepfoot rollers, and paving equipment wait for repairs. Recommendations for repairs are made by job project managers; the final decision to overhaul or trade in equipment is made at the home office.

LOADED!



GET THIS EXTRA YARDAGE with a Hendrix Dragline Bucket. The scientifically-arranged perforations make it a "natural" for wet digging...lets water go through...leaves more room inside for material. In wet or dry digging, a Hendrix produces MAXIMUM bucket loads for GREATER PROFITS!

"A Type for Every Digging Purpose"

1/4 to 40 Cubic Yards

HENDRIX MANUFACTURING COMPANY, Inc.

MANSFIELD, LOUISIANA

For more facts, use Request Card at page 18 and circle No. 368



All Hendrix Buckets available
without perforations

(Continued from preceding page)

eliminates the need for stocking spare parts on the job.

Jones attempts to standardize on one make of equipment for a project so that maintenance can be done by a dealer, but this is not always possible.

Shipping cost is another factor that determines which make of machine is sent to a job. Two machines of different makes might be available, a Bucyrus-Erie and a Lorain, but it might turn out that because of the geographical location of the job, the cost of shipping the Lorain is just a fraction of the cost of shipping the Bucyrus. In this case, the Lorain is sent to the job.

The Jones maintenance shops range from permanent masonry structures to a mobile facility set up under a palm tree in the tropics. The permanent shop at Berlin Heights, Ohio, is a corrugated metal building in an enclosed eight-acre yard. The maintenance shop at the home office in Charlotte is a masonry building.

In this shop, as in most of the shops on projects within the United States, items such as air and oil filters, spark plugs, and fan belts are kept on hand and considered as supplies. In remote areas and on foreign projects, past experience and the list of parts suggested by the manufacturer are used to determine the parts inventory.

Equipment coordination

When a contract has been awarded, the project manager or a company official submits a list of equipment required for the work. This list generally consists of the equipment the project boss prefers.

J. J. Haynie, assistant vice president in charge of equipment, supplies the project. Idle equipment, if any, is shipped to the job site first. Then a check is made of nearly completed projects which can release machines for shipment. If idle or about-to-be-released equipment will not fill the request, new equipment is purchased.

This is not a hard-and-fast rule. Even if an idle rig is available, Jones rents a machine near the site if the job is so far away that it is uneconomical to ship the company machine. Again, if the job is far away from the site of a job that is nearing completion, and another contract has been awarded for work nearby, a machine is kept idle a few weeks and shipped to the closer site.

Purchases of a minor nature are handled directly from the job by a project purchasing agent, and all major items are handled by the home or branch offices. On very large jobs, Jones finds it more efficient to set up a complete procurement organization in the field.

Equipment purchasing, maintenance, and movement for a company the size of J. A. Jones add up to major projects in themselves. So well coordinated are these activities of the firm, however, that they are kept—successfully—in the background.

THE END

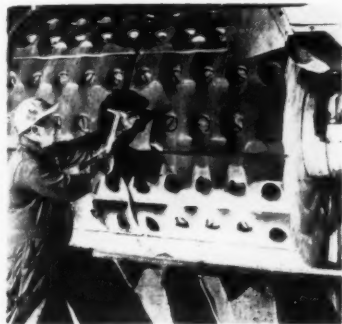
CONTRACTORS AND ENGINEERS

Case history

Thread inserts said to pare crusher downtime

Time lost in repairing damaged threads on crusher cores or mandrels reportedly can be cut many times over with a permanent repair technique developed by the Heli-Coil Corp.

With this technique, worn threads are drilled out and retapped, and wire thread inserts are installed to provide permanent threads of the original size—without taking the machine apart.



This 4-foot-diameter roll crusher is salvaged, and its life extended, by repairing wear-plate holes with wire thread inserts. With the holes thus reinforced, wear plates can be set up as tightly as possible.

Repair operations are as follows: (1) damaged threads are cleaned out with a drill slightly larger than the original thread major diameter; (2) the hole is retapped with the standard Heli-Coil tap; (3) a stainless steel Heli-Coil insert is installed, bringing the hole back to the original thread size. The thread insert is installed with a hand tool so that the top coil is $\frac{1}{2}$ turn below the surface.

According to the company, wear plates can be set up as tightly as possible. Up to 4,000 foot-pounds have been applied on heat-treated bolts used to fasten the wear plate to the core.

For further information write to the Heli-Coil Corp., Division of Topp Industries, Inc., Dept. C&E, 1496 Shelter Rock Lane, Danbury, Conn., or use the Request Card at page 18. Circle No. 152.

AGC film stresses need for engineers

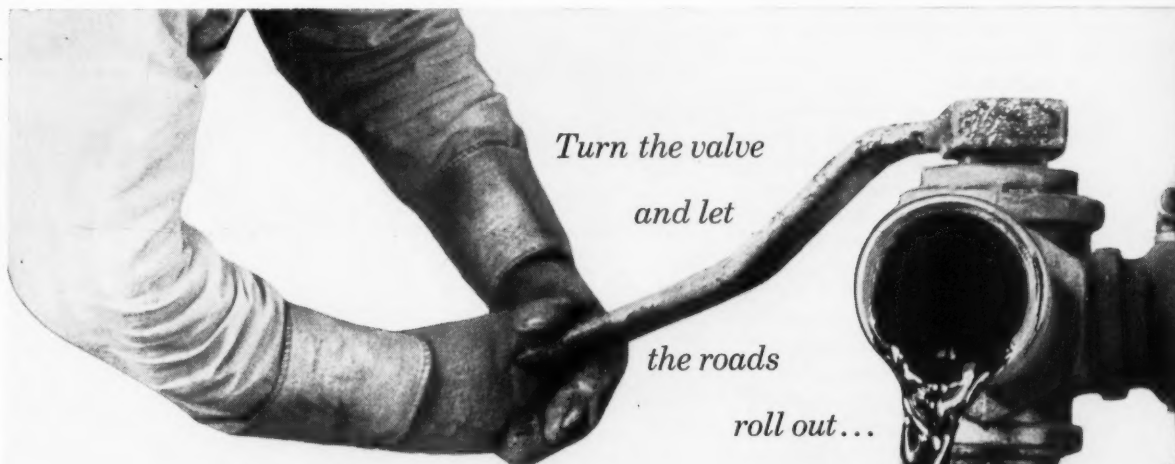
"The Constructors", a 16-mm color motion picture, showing various types of construction and highlighting the industry's need for engineers, has been prepared by The Associated General Contractors of America, Inc. The film is designed to interest students in junior and senior high schools in engineering.

The growing need for engineers in construction is stressed, and the advantages offered in such careers are pointed out. Students are told how to prepare the educational foundation for this profession.

The 17-minute film is available through AGC chapters and branches. Information may be obtained from these chapters, or from national headquarters in the Munsey Bldg., Washington 4, D. C.

For more facts, circle No. 369 →

Case History: Leveling land for the new Tunica, Miss., airport, eight Johnson elevating scrapers pulled by Minneapolis Moline GB tractors saved time and money for Mississippi contractor J. A. Rust. Each scraper moved approximately 100 cubic yards per hour on an average turn-about cycle of 500 yards. Each cycle required from 5 to 8 minutes. Loading time on 11-yard units was less than 2 minutes; on the 8-yarders, about 1 minute and 20 seconds. Another advantage cited by Rust was that the "material was loaded in a pulverized condition and could be spread to grade, saving time and money on finishing". For further information on these scrapers, write to the **Johnson Mfg. Co.**, Dept. C&E, P. O. Box 1674, Lubbock, Texas, or use the Request Card at page 18. Circle No. 115.



STANDARD Asphalt and Road Oils

There are four big reasons why Asphalt and Road Oils can help you with your road-building program *now* . . . reasons why you should open the valve and let the roads roll out.

- 1. Get action fast.** You can start building roads quickly without the extensive planning and engineering required for other construction materials.
- 2. Benefit more people.** Communities that need new roads and road improvements *now* can get them *now*. Men who need work can be put to work *fast*.
- 3. Less engineering manpower.** Road construction with Asphalt requires less engineering man hours to get under way and build. You get more miles of roads out of the available engineering manpower.
- 4. Low cost.** New highway construction, as well as rejuvenation and improvement of existing roads, costs less with Asphalt. You can put down more miles of road for less money.

Standard Oil produces Asphalt at four convenient Midwest locations. Tank car and truck deliveries are made from the Standard Oil refinery nearest your job. Technical service on Asphalt is provided by men experienced in this work. And Standard Oil delivers on contracts in time of short supply as well as when materials are plentiful.

Call your nearby Standard Oil office anywhere in the 15 Midwest or Rocky Mountain states for more information about Asphalt. Or write **Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.**



You expect more from **STANDARD** and get it!



Costly downtime? Not by a dam site!



maintenance

Equipment checks, every 100 operating hours, are the backbone of a strong preventive maintenance program that List & Clark Construction Co. is using to keep its earthmoving spreads in top operating condition on a big dam project.

The Kansas City, Mo., construction firm is in the early phases of its second major contract on the Tuttle Creek Dam near Manhattan, Kans. Located on the Big Blue River, the \$90 million structure will be a key unit in the Kansas River Basin flood-control system.

List & Clark's current contract, for \$5 million, covers completion and closure of the embankment, and excavation of the approach and outlet channels of both the outlet works and the spillway. The job got under way late in March of this year and is scheduled for completion in April, 1961.

The company's first contract on this job entailed another \$5 million worth of embankment work, completed late last year. Therefore, a large spread of earthmoving equipment and a well equipped maintenance shop were already at the site when the new contract was awarded.

The big rigs being used on this job include 30 Euclid bottom-dumps, of 13, 17, or 25-yard capacity; six Athey wagons pulled by Euclid four-wheel tractors; four Tournarockers; 20 tractors, including 12 Caterpillar D8's and four Allis-Chalmers HD-20's; six big excavators, including a Manitowoc 6-yard dragline and a Manitowoc 5½-yard shovel; and scrapers, graders, rollers, drills, and compressors.

Preventive maintenance program

Needless to say, it takes an effi-

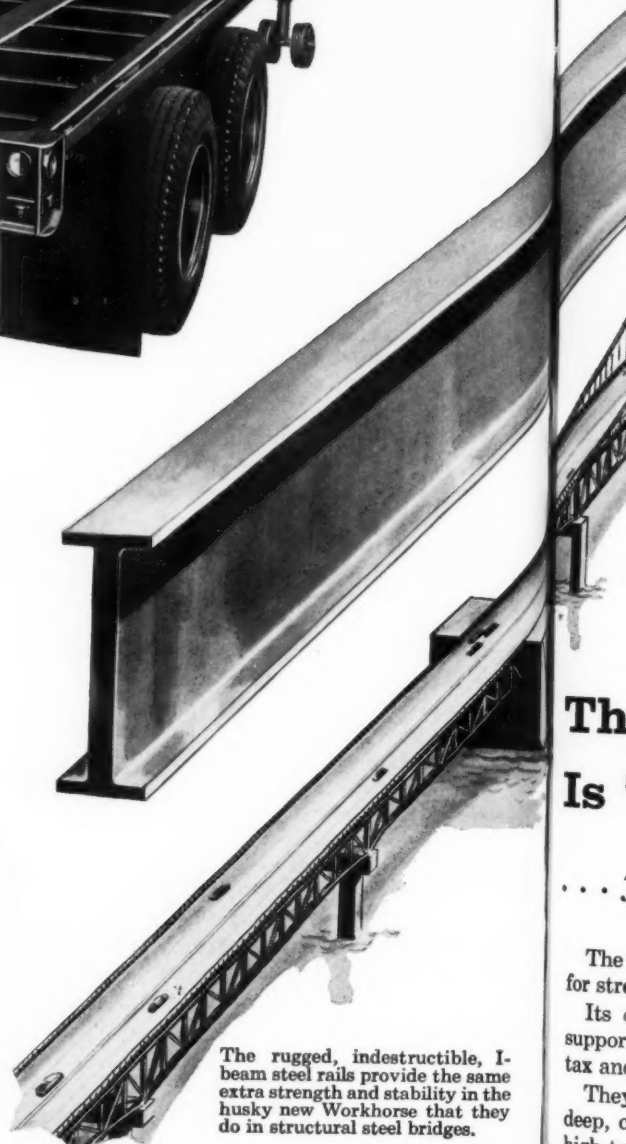


Job superintendent W. T. Buford (left) and office manager Lee Meredith check over the preventive maintenance record on a Cat D8 to determine if its field performance is up to par.

List & Clark's field office and shop building are set up at the foot of the embankment on the Tuttle Creek Dam project. The Butler building at center houses the shop, while offices are in the smaller building at the right.



The deep, full-length, girder type, I-beam rails and full-width, I-beam crossmembers are welded together for the same type of powerful structural steel construction used in many modern bridges.



The rugged, indestructible, I-beam steel rails provide the same extra strength and stability in the husky new Workhorse that they do in structural steel bridges.

FRUEHAUF BUILDS THE HAULING INDUSTRY'S BIGGEST LINE OF RUGGED CONSTRUCTION TRAILERS!



CABLE DUMPS



HOIST DUMPS

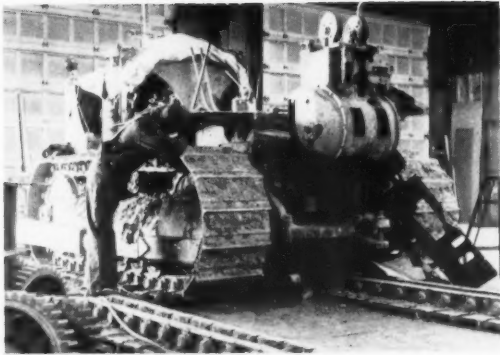


CARRYALLS

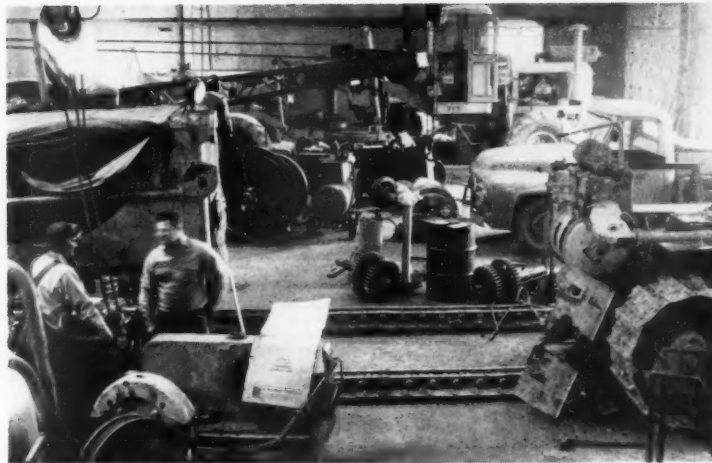


BULK CEMENT TANKS

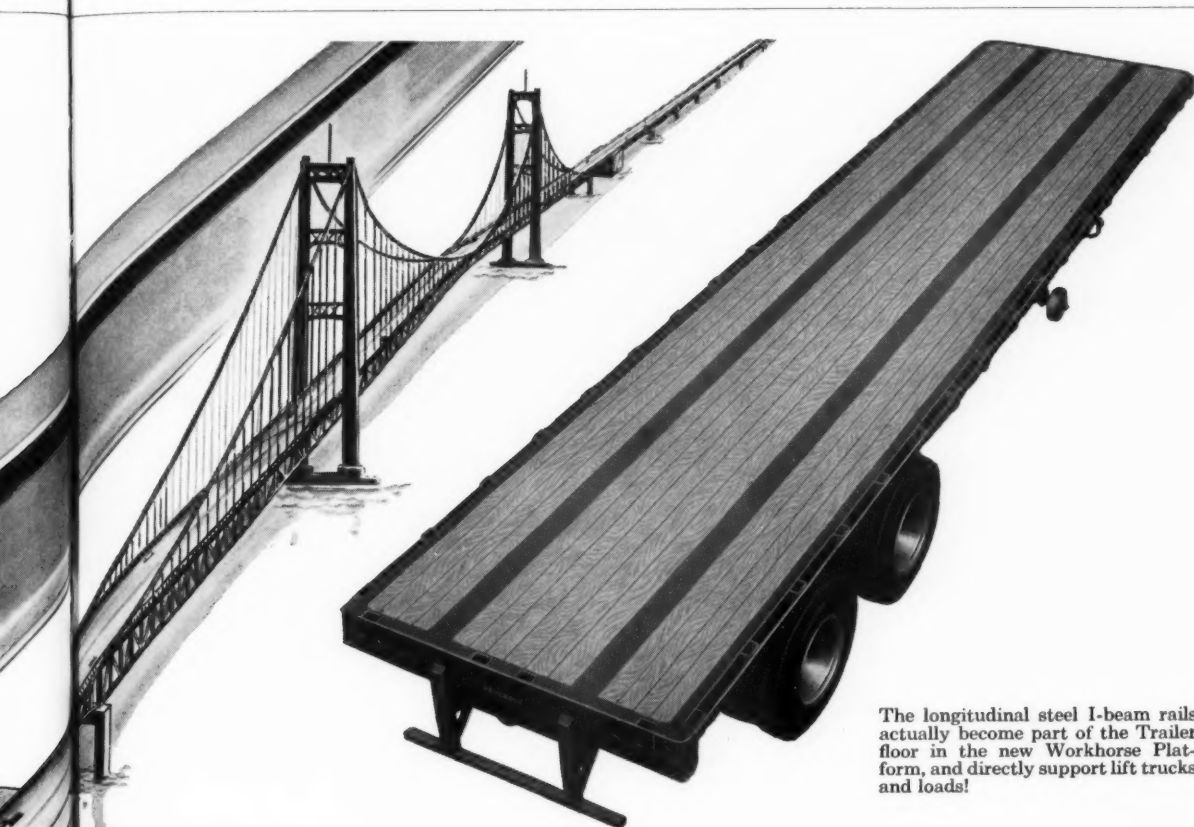
CONTRACTORS AND ENGINEERS



A Caterpillar D8, brought into the shop from the field, gets a thorough checkover in the List & Clark shop. Wheels are pulled and all components carefully inspected during this checkover.



List & Clark's field shop is crowded with rigs being checked and overhauled, as the company prepares to tackle its second \$5 million contract at Tuttle Creek Dam.



The longitudinal steel I-beam rails actually become part of the Trailer floor in the new Workhorse Platform, and directly support lift trucks and loads!

The New Fruehauf Workhorse Platform Is Tough As A Bridge!

... yet saves up to 1,200 pounds in weight

The new Fruehauf Workhorse Platform is built for strength, lasting power, and big weight savings.

Its deep, deep 19½" I-beam channels directly support loads, lift trucks, and all the forces that tax and strain platform strength.

They do the job, and last, because they're extra deep, continuous, forged of the toughest low alloy, high-tensile steel.

Rugged, full-width I-beam crossmembers at 18"

intervals increase rigidity and carrying capacity. Everything about the Workhorse is designed for top payloads and hard work.

Call your Fruehauf Branch while you're thinking of it now for a complete look at the toughest platform built!

Fruehauf Trailer Company, 10949 Harper Avenue, Detroit 32, Michigan.

**FOR FORTY-FOUR YEARS
MORE FRUEHAUF TRAILERS
ON THE ROAD THAN
ANY OTHER MAKE!**

World's Largest Builder of Truck-Trailers
FRUEHAUF TRAILER COMPANY
10949 Harper Avenue • Detroit 32, Mich.

✓ SEND ILLUSTRATED LITERATURE
GIVING MORE FACTS ABOUT THE
NEW FRUEHAUF WORKHORSE PLAT-
FORM AT ONCE.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

For more facts, use coupon, or Request Card at page 18 and circle No. 370

cient maintenance organization to keep these machines in peak-capacity operating condition.

Project superintendent W. T. Buford has the organization, with a preventive maintenance program using check sheets furnished by Euclid. Where applicable, the Euclid system is used as is. The system has been adapted by List & Clark to cover track-type machinery as well.

Each rig is checked over in the field by a mechanic every 100 operating hours, with a more comprehensive check at the 500-hour mark. Every 1,000 hours, the machine is pulled into the job shop for a thorough going over and overhaul where necessary. During this 1,000-hour check, the wheels are pulled and all components carefully inspected and tested.

The Euclid system carries these regular checks to the 4,000-hour point, when a general overhaul is usually considered advisable.

For both the field and job checks, mechanics use work sheets that have a number of check points listed, together with space for their findings and a record of what work is indicated and done. Data from these sheets is transferred to a permanent record book—one for each piece of machinery—which is kept in the job office, and in which the field and job reports are posted.

Two valuable reports filed daily are a "Driver's Daily Memo" and a "Mechanic's Report". The first lists the number of hours the rig worked, the number of hauls made, the amount of gas and oil added, and also provides space for the operator's comments as to what needs to be looked at. The second is filed wherever a mechanic spends more than 15 minutes on any repair job.

Of course each rig is lubricated once during each shift, and the lube crew is headed by a man trained to detect signs of unusual wear or symptoms of impending trouble. Consequently, these crews make a substantial contribution to the preventive maintenance program.

Monthly reports

A detailed report on the preventive maintenance program is sent once a month to the home office, after all pertinent data have been compiled by

(Continued from preceding page)



Even the maintenance rigs occasionally need service. Here a Ford F-250 pickup, used by a field mechanic, gets air in its tires. Lincoln dispensing equipment is mounted on the lube truck.

the office manager and parts men.

The monthly reports on each machine contain two highly important pieces of information: the number of hours the rig was available for work, and the cost per hour of operation. The last item reflects repair and parts costs charged against the machine, so that it may vary considerably from month to month for the same unit.

These preventive maintenance records serve another purpose by indicating to job management what parts are moving. This information helps the parts department to determine what parts need stronger representation in the inventory.

An inventory of about 10,000 parts is stocked at one end of the maintenance shop, and cataloged on a Kardex system. Here, too, the trend is to cut down on the inventory, both because of the fast service provided by nearby dealers, and because the company's well stocked parts department is readily accessible. Only six hours' notice is required to bring a part to the job site from company headquarters.

The job setup

List & Clark's job setup includes an office building, made of insulated Armco corrugated metal sheeting and heated for year-round use. The shop is a Butler building, 60x120 feet, also insulated and heated by a National Heater Co. furnace.

In the shop, equipment and components are handled by two electric overhead traveling hoists: a Budgit 2-ton and a Yale 2-ton. There are a Rodgers 50-ton hydraulic press, a Black & Decker heavy-duty electric drill, and all the standard repair tools. Welding equipment includes a Magna Welder 15-amp automatic-feed unit and a Lincoln 400-amp machine. A Malsbary steam cleaner just outside the shop is used to clean all equipment before it is serviced.

Two lube trucks operate from the shop to service equipment in the field. Both Ford F-600's, they carry Lincoln dispensing equipment, Gardner-Denver compressors, and Onan light plants. The job also uses four mechanics' trucks—Ford F-250 ¾-ton pickups—equipped with all the standard mechanics' tools. These trucks use Motorola or RCA radio to communicate with the shop.

Five welding trucks—Ford F-600's—are equipped with Lincoln 300-amp welding machines for work in the field.

The shop itself is manned by H. A. Burden, shop superintendent, and nine mechanics, six welders, and a couple of parts men.

Fuel is brought to the site by tank truck and stored in twin 12,500-gallon tanks near the shop. A fuel truck services rigs in the field, while pumps at the tanks take care of other machines.

A 25-foot wellpoint pump system with a capacity of 300 gpm provides water for every purpose but drinking. Drinking water is purchased from the town of Manhattan.

Supervisory personnel on this job feel that the preventive maintenance program has shown outstanding results. Office manager Lee Meredith puts it this way:

"We're still in the novice stage as far as preventive maintenance goes, but the program has already paid its way and we have seen some spectacular results. For example, a routine 1,000-hour check turned up cracked front-end spindles on four 'Euc' bottom-dumps. We might not otherwise have detected them until they had broken, and then we'd have had some real downtime."

THE END

CONTRACTORS AND ENGINEERS



BID LOWER WORK FASTER MAKE MONEY *with* CARDUX-HARDSOCC multi-purpose ROTARY DRILLS

TOWS AT HIWAY SPEEDS

Heavy Duty Vertical Drill

Vertical holes go down faster and at lower cost with little or no operator effort. Weight of the engine forces the conveyor auger and its cutterhead down. Ideal for test hole drilling to depths of 75 feet and more (3" diameter hole) under average drilling conditions. Larger augers can be used to limited depths. Dolly-wheel for job site positioning removes easily to permit attaching to trailer hitch on cars or trucks for hiway travel. Economy of operation is matched by lasting performance and low cost maintenance. 12 H.P. 4-Cycle, 2 cylinder, air-cooled gasoline engine. Also available in standard model with 6½ H.P. engine.

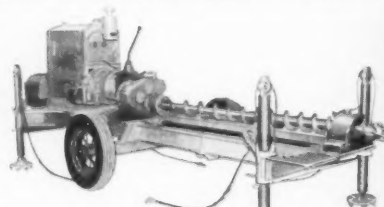
Air or water swivel chucks available for use with coring equipment.



GENERAL PURPOSE DRILL

The most versatile drill you can imagine. Mounts on any truck, crawler or wheel tractor—drives from Power Take-off. Also available with separate power unit. Drills at any angle from horizontal to vertical. Handles augers from 3 to 12 inches in diameter at feed rates up to 20 f.p.m. Unmounted, it is easily converted for trench drilling purposes.

Vertical and Horizontal Models for a Wide Variety of Drilling Uses!



Heavy Duty HYDRAULIC HORIZONTAL DRILL

A powerful machine for horizontal drilling of blast holes. Can also be adapted to culvert drilling. Self-propelled—rolls right up to the job and goes to work! Water cooled engine handles auger equipment up to 28" diameter. Hydraulic coupling provides shock-free transmission of power, saves wear and tear. 2 models available with or without self-propelled unit.

NOTE TO Dealers:

Distributorship still available in various parts of the country. Write for information.

Contact your equipment dealer for additional information

or write to **CARDUX CORPORATION**

307 North Michigan Avenue • Chicago 1, Illinois

For more facts, use Request Card at page 18 and circle No. 371

Look ahead...*move ahead*...and stay ahead
with Allis-Chalmers construction machinery



**fastest growing acceptance
in the business...**

Everywhere you go, you see more and more Allis-Chalmers construction machines—because they're *doing more*. On big jobs or utility work, they're proving value by performance . . . earning steadily increasing popularity.

HERE'S THE COMPLETE LINE

Allis-Chalmers crawler tractors for every application

63 built hp to 225 net engine hp
12,200 lb to 45,500 lb bare wt.

... plus a complete line of matched
bulldozers, side booms, mounted rippers,
other attachments.

HD-21

225 net engine hp
torque converter drive
56,260 lb (approx. as shown)

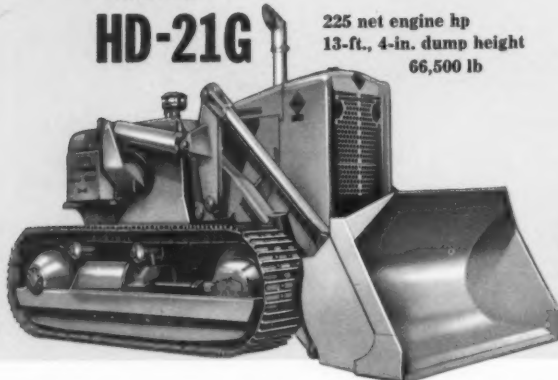


HD-21A illustrated—
Two other models available

4-CU-YD

HD-21G

225 net engine hp
13-ft., 4-in. dump height
66,500 lb



3-CU-YD

HD-16G

150 net engine hp
12-ft., 3-in. dump height
47,800 lb



Designed and built for high-volume pe

Allis-Chalmers motor scrapers and wagons

Five models that offer
major advantages on
big jobs or utility work.

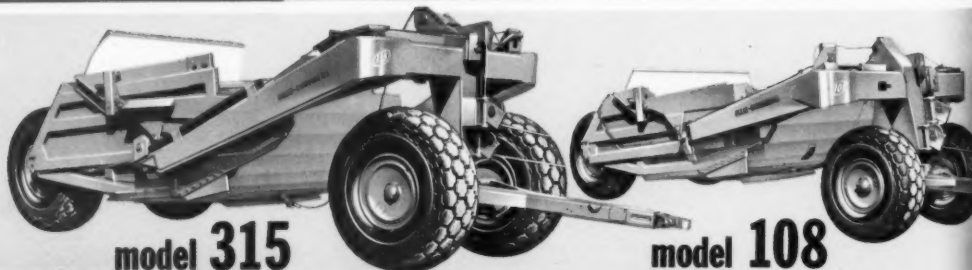


TS-360

280 hp
Struck—15 yd • Heaped—20 yd
Weight—49,050 lb (approx.)

TW-360

280 hp • 28 payload tons
Struck—17 yd • Heaped—24 yd
Weight—47,000 lb (approx.)



model 315

Struck—15 yd • Heaped—20 yd • Cable control • 25,850 lb

model 108

Struck—8.4 yd • Heaped—12 yd
Cable control • 15,250 lb

HD-16

Choice of two outstanding drives
torque converter | all-gear
150 net engine hp | 141 belt hp
39,090 lb (approx. as shown)

HD-11

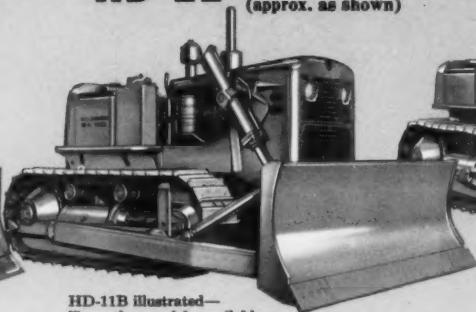
94 belt hp
25,960 lb
(approx. as shown)

HD-6

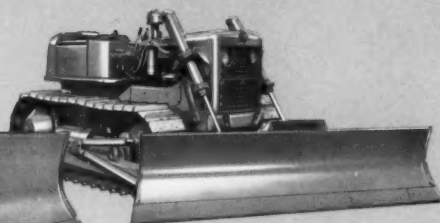
63 belt hp
16,470 lb
(approx. as shown)



HD-16DC illustrated—
five other models available



HD-11B illustrated—
Two other models available



HD-6E illustrated—
Three other models available

2¼-CU-YD

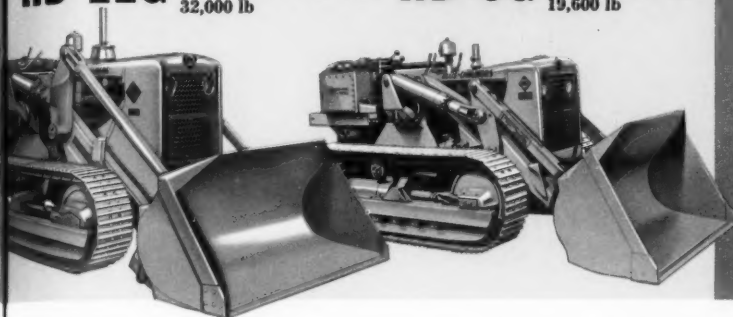
HD-11G

111 net engine hp
11-ft., 7-in. dump height
32,000 lb

1½-CU-YD

HD-6G

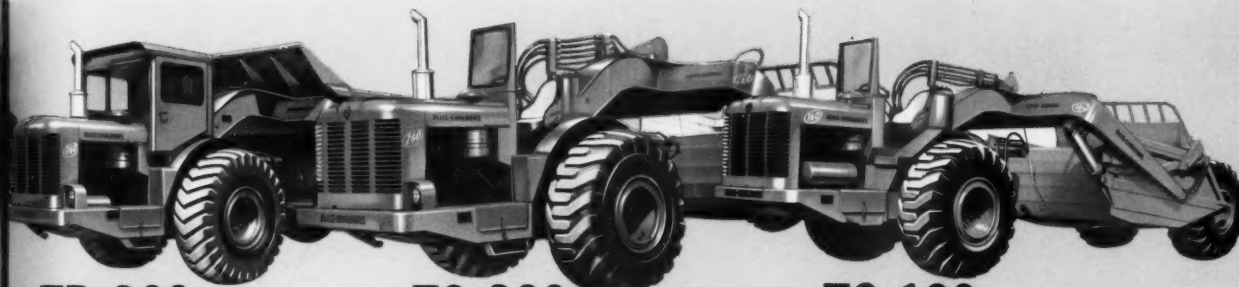
72 net engine hp
10-ft. dump height
19,600 lb



Allis-Chalmers
tractor shovels in a
full range of bucket sizes

Up to 7-cu-yd capacity to
match requirements for various
materials and job conditions.

me performance you can depend on



TR-260

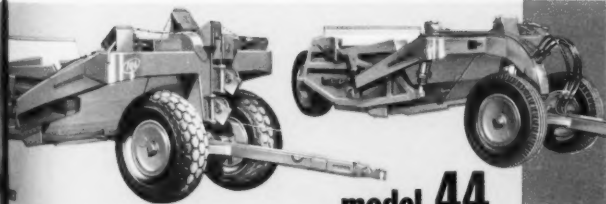
200 hp • 18 payload tons
Struck—11 yd • Heaped—15 yd
Weight—43,800 lb (approx.)

TS-260

200 hp
Struck—11 yd • Heaped—14 yd
Weight—39,600 lb (approx.)

TS-160

155 hp
Struck—7 yd • Heaped—9½ yd
Weight—28,500 lb (approx.)



model 106

Struck—6.1 yd • Heaped—8.5 yd
Cable control • 10,300 lb

model 44

Struck—4 yd
Heaped—5.4 yd
Hydraulic control
6,595 lb

Allis-Chalmers
pull-type scrapers

The only line with low bowl,
high apron lift, forced
ejection in every size.

SEE MORE

ENGINEERING
IN ACTION

**Allis-Chalmers motor graders—designed for
comfort-conscious operators and cost-conscious owners**



Model D Special

50 brake hp
10,900 lb (gasoline)
11,450 lb (diesel)
4 forward speeds to
25 mph (approx.)
1 reverse speed to
3 mph (approx.)
All-steel cab*

Shiftable moldboard*
Hydraulic scarifier*
Leaning front wheels*
Power circle turn*
*Also available
individually with the
Model D Standard as
optional equipment.

Rear-mounted attachments available as
optional equipment include $\frac{3}{4}$ -yd loader;
shoulder maintainer; windrow eliminator.

Model D Standard

50 brake hp
8,800 lb (gasoline)
9,350 lb (diesel)

FORTY-FIVE

120 brake hp
6 forward speeds to 20.6 mph
3 reverse speeds to 7.0 mph
23,800 lb (approx.)

**Ask for a demonstration. Your Allis-Chalmers dealer will be glad to prove the
value of any of these machines in a working demonstration. Call him now.**

Look ahead...*move ahead*...and stay ahead

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS



FORM MS-1302

Litho. in U.S.A.

ers

E

0.6 mph
0 mph

ad

in U.S.A.

G

po
ha
Ch
In
me
po
tio
bec
po
inv
ton
equ

**W
a**

ha
the
dir
ing
sal
to
ton
sol
tic
con
con
min
tion
C
tion
are
J.
hea
Fre
Oh
in
We
Cal

**M
for**

F
166
Join
ava
tuti
bull
of
and
of
in
hot

T
cal
nec
seal
rese
seri
whe
mee
the
by
ect
Tec

T
pric

Ove
1957
JUN

Gas-turbine engine powers A-C test tractor

An experimental crawler tractor, powered by a high-speed gas turbine, has been developed by the Allis-Chalmers Mfg. Co., Milwaukee, Wis. Inside the tractor's engine compartment, a Boeing 503-10C gas-turbine power unit has replaced the conventional diesel engine.

The model, named the P-91, has been assembled for research purposes. The design of the gas turbine involves the equivalent of a built-in torque converter, which is standard equipment on Allis-Chalmers' Model

HD-21 crawler tractor. The ability of the turbine to deliver the range of speed and flexibility of power required for successful tractor operation will be thoroughly tested.

Net horsepower developed by the turbine to drive the tractor is said to equal that of its diesel counterpart. Exhaust gases, greater in volume than in a diesel, have been handled in such a way as not to inconvenience the operator. The noise level is reported to be equal to that of the diesel-powered unit.



The Allis-Chalmers experimental P-91 crawler tractor, powered by a Boeing gas-turbine engine, is given a workout at the proving ground of the firm's Springfield, Ill., works. This model is part of the company's research program to test and evaluate the gas-turbine engine as a power source for tractors.

Worthington establishes a resale operation

Worthington Corp., Harrison, N. J., has organized a new resale operation that is completely separate from its direct selling activities. Resale selling, as identified by the firm, is the sale of franchised industrial products to franchised Worthington distributors.

Worthington industrial products sold through distributors include vertical turbine and standard pumps, construction machinery, air-cooled compressors, mechanical power transmission equipment, and welding positioning equipment.

General manager of resale operations is P. J. Foley. Reporting to him are four regional resale managers: J. E. Seibold, Eastern region, with headquarters in the home office; R. N. Franz, Central region, in Cleveland, Ohio; J. T. Carroll, Midwest region, in Chicago, Ill.; and M. H. Needham, Western region, in San Francisco, Calif.

Methods, materials tests for joint, crack sealing

Highway Research Board Bulletin 166, "Field Studies of Methods for Joint and Crack Sealing", is now available from the HRB, 2101 Constitution Ave., Washington 25, D. C. The bulletin contains two papers, the first of which describes the construction and subsequent performance study of an experimental resealing project in Michigan. Six different brands of hot-pour sealer were used on the job.

The other paper outlines the physical requirements that appear to be necessary for a successful crack sealer based on the authors' previous research. The paper also describes a series of tests designed to measure whether a sealing material would meet these requirements, and reports the results of testing 26 compounds by the Joint Highway Research Project at the Massachusetts Institute of Technology.

The well illustrated bulletin is priced at 80 cents.

Over 30,000 Americans were killed in 1957 traffic accidents.

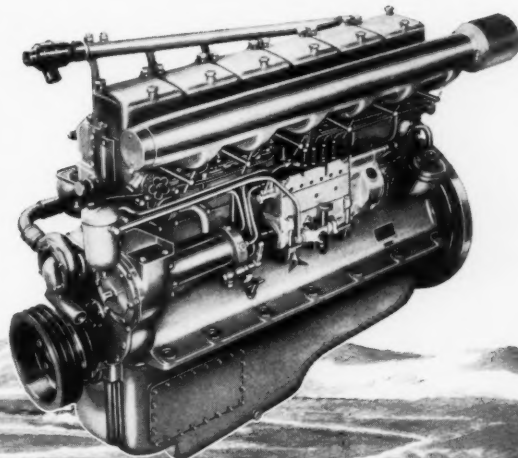
JUNE, 1958

**Modern As The Highways
They Help To Build!**



MERCEDES-BENZ DIESEL ENGINES

Today's modern construction machines are high-performance products in which the power plant is the most vital part. Mercedes-Benz diesels are compact for easy installation and service — dependable for long, trouble-free operation. The time-proven, world famous Mercedes-Benz diesel engine is quality in every detail — in its 4-stroke principle, pre-chamber combustion process, smokeless combustion and its effortless performance and ultra-dependability when subjected to severe load changes . . . Engines are available in ratings from 36 to 1385 h. p. to power everything from the smallest auxiliary to the largest earthmover.



MODEL 846 A
244 h.p. at 1500 r.p.m.

Other Mercedes-Benz diesels available in 12 and 20 cylinders, Turbo and Supercharged, up to 3000 h.p.

UTICA DIVISION
CURTISS-WRIGHT
CORPORATION • UTICA, MICHIGAN



For more facts, use Request Card at page 18 and circle No. 373



Bob Cookinham



Archie La Pointe

Records system: Key to equipment upkeep

Two men and an elaborate system of checks, reports, and records are responsible for the general and preventive maintenance programs which an upstate New York contractor employs to keep more than \$5 million worth of machinery and equipment in A-1 working condition.

D. W. Winkelman Co., Inc., of Syracuse, a 26-year-old earthmoving firm doing between \$15 and \$20 million

worth of work annually, believes that good maintenance is a fundamental economy measure. Evidence of this is the time and money that have gone into setting up, operating, and constantly improving its equipment maintenance division.

This earthmoving firm owns and operates some 300 major pieces of construction machinery, as well as nearly 1,000 smaller items. The main-

tenance operation doesn't stop with these, however; Winkelman has half a dozen subsidiary companies in such specialized fields as steel erection, asphalt paving, and prestressed-concrete manufacture, and these contribute another 500 items to the over-all equipment inventory. This means that the maintenance program covers a total of approximately 1,800 equipment items.

Sharing the management responsibility for this gigantic program are two Winkelman veterans. Archie La Pointe, the equipment superintendent, started with the firm 18 years ago as a mechanic. Robert Cookinham, office manager for the division, went to work for Winkelman 17 years ago in a field office.

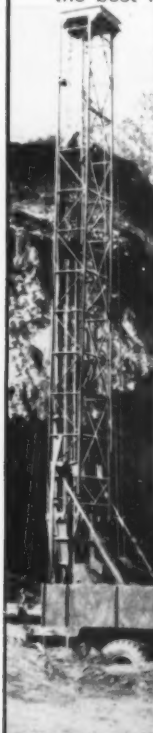
Today these two men, working directly under the president, Dwight W.

KEYSTONE-FRANKS ROTARY MOLE DRILLING MACHINE

Phone for a Demonstration

Telephone: Beaver Falls, Pa. 69, or Kearny, New Jersey, 2-2600

For 6 1/2" blast holes, our experience indicates that we can drill them faster and at a lower cost because we have combined the best in applied drilling engineering.



- Gardner Denver AM6 Mole Drill
- Timken 6 1/2" carbide insert bits
- International Harvester Truck
- Cummins Diesel Engine
- Gardner-Denver WBJ Compressor, 600 CFM at 100 PSI
- Keystone Franks Rotary Mole Drilling Machine

While we DEMONSTRATE what we can do, we cut your drilling costs at the same time. Phone or write us for a DEMONSTRATION on your quarry, mine, road or construction job.



GARDNER DENVER COMPANY

MOLE DRILL

DOWN THE HOLE

GUN

with Timken threaded carbide insert rock bit

STARDRILL-KEYSTONE COMPANY

MAIN OFFICE: BEAVER FALLS, PA., TELEPHONE 69

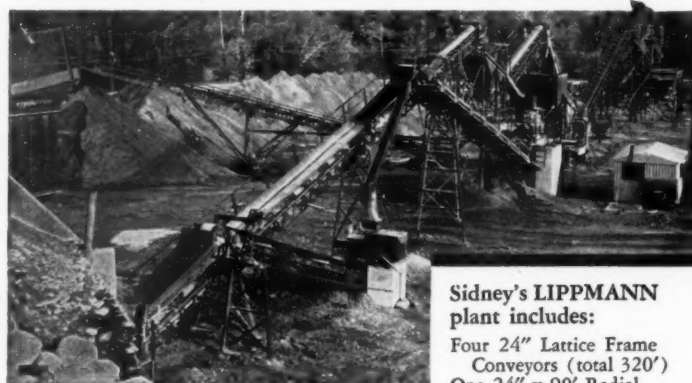
BRANCH: KEARNY, NEW JERSEY, TELEPHONE 2-2600

MANUFACTURERS SINCE 1882

For more facts, use Request Card at page 18 and circle No. 374

"Our LIPPMANN crushing and washing plant still 'top-notch' after 3 years"

says William Milligan, Pres. The Sidney Sand & Gravel Co., Sidney, Ohio



Sidney's LIPPMANN plant includes:

- Four 24" Lattice Frame Conveyors (total 320')
- One 24" x 90' Radial Stacker
- Four Screen-all d.d. screens — 3' x 12' to 4' x 14'
- One Screen-all s.d. screen 3' x 4'
- One 15 x 24 Rock Ram Jaw Crusher
- One 15 x 36 Grizzly King Jaw Crusher
- One 30" x 5' Reciprocating Plate Feeder
- One 30" x 25' Single Screw Fine Sand Classifier
- Four 40 yd. Single Compartment Bins
- One 25 Yd. Single Compartment Bin.

Writes Mr. Milligan, "Back in 1954 when we made our final plans for installing an improved completely new crushing and washing plant here at Sidney, we naturally wanted the best machinery we could get to fit our plans. After considering a variety of pit equipment, we decided on using Lippmann. Your equipment was new to us so we did not want to write you prematurely about it. However, now after three years service, we can say that we truly have not regretted our decision. We get 150 tons of crushed, screened, and washed high-quality material per hour on the average and reach peaks as high as 200 tons. The ability of your equipment to produce like this along with the excellent service it has given makes it top notch in our opinion."

You'll like LIPPMANN too!

This same complete Lippmann-engineered planning and manufacturing service is now available to help you keep competitive in quantity, quality and cost. Whether it's complete portable or stationary crushing or washing plants, or individual components, it will pay to contact your local Lippmann Dealer, or Lippmann Engineering Works, Inc., 4637 W. Mitchell St., Milwaukee 14, Wisconsin.

1900-58-1



For more facts, use Request Card at page 18 and circle No. 375

CONTRACTORS AND ENGINEERS



Dwight W. Winkelman

Winkelman, have the sole responsibility for purchasing, assigning, and maintaining equipment. They are quick to admit, however, that without the detailed record system they use the job would be an impossible one.

Like most large contracting firms, Winkelman handles work that ranges far outside the immediate area of the home office. Right now there is a heavy concentration of highway work in Illinois and Ohio, and so the firm has set up a maintenance shop at Akron, Ohio. But reports are still filed daily with the Syracuse headquarters, where the equipment division keeps a close check on all of the firm's machinery.

The backbone of the maintenance record system consists of two master records: an "Equipment Maintenance

Record" and an "Equipment Investment Ledger". These consist of 8½ × 11-inch cards which together contain the entire history—costs, repairs, performance, etc.—of each individual piece of equipment. It is these cards which La Pointe and Cookinham study from time to time, to determine when a piece of equipment is ready for trade-in or retirement.

The Equipment Maintenance Record for a particular machine lists, for example, all the replacement parts needed and when they were put in, the amount of man-hours spent in repair of the machine, and both the parts and labor costs charged to that machine. The Equipment Investment Ledger includes a summary of this information, plus complete figures on

(Continued on next page)

Parts are stored neatly in bins at the rear of the Syracuse shop, and are cataloged on a Kardex system (left). Note revolving bins for nuts and bolts at right.



AMCO DOES THE JOB!



*Fast—
Economically—
Conveniently—*

THE H. B. ZACHRY CONSTRUCTION COMPANY finds that these sturdy Jobmasters really fill the bill. They now have several in operation on airport and highway jobs.

The above photograph shows a Jobmaster cutting compacted grade for mixing water to obtain proper soil density on a federal super-highway project on Route 80 between Abilene and Sweetwater, Texas.

Some Typical AMCO Uses for Roads and Similar Jobs

Land clearing • cut and fill work • stabilizing soil • aeration of soil • scratching a compacted surface • for mixing base • mixing materials and aggregates • landscaping operation.

AMCO Harrows are especially effective in breaking hard-pan soil, allowing bucket equipment to fill rapidly.

WRITE, WIRE OR CALL FOR MORE INFORMATION

ALEXANDER MANUFACTURING CO.

P.O. Box 407 — PICAYUNE, MISSISSIPPI — SYcamore 8-4791
For more facts, use Request Card at page 18 and circle No. 377

**The
miller
GOLD STAR
ALL STAR
LINE**

SR ... the dc rectifier type welder with new completely sealed semimetallic rectifier, new transformer and new weld stabilized circuit. Result is easiest arc starting ever; maximum arc stability; sounder, denser welds; current that handles all electrodes in all positions! Four models, 200 to 600 amps.

SRH ... the same revolutionary improvements that set the Gold Star SR above and beyond the performance standards ever before achieved by a dc rectifier type welder. Designed primarily for compactness, the SRH is only 30 1/4" high — is ideally suited for stacking or paralleling in minimum space. Three models, 200 to 400 amps.

300 ... combination ac/dc welder design comes of age with this new Miller model. Features: new magnetic amplifier circuit; improved wave form; new arc starting control; three electrically controlled current ranges for finest adjustment; instant changeover from ac to dc; built-in high frequency. An entirely fresh concept for inert gas and metallic welding. Four basic models with kits available to convert to seven different types of welders.

300-M ... an ac welder for inert gas and metallic arc processes. Combines unequalled welding characteristics with Miller's unique electric control circuit which permits precise slow or fast start. Features: built-in high frequency; primary contactor and its KVA control transformer. Offered in three basic models of from 200 to 400 amperes with optional water and gas controls available.

Complete particulars on any of the above welders will be sent promptly.

miller ELECTRIC MANUFACTURING COMPANY, INC. Appleton, Wisconsin
Distributed in Canada by Canadian Liquid Air Co., Ltd., Montreal, P. Q.

For more facts, use Request Card at page 18 and circle No. 376



The Winkelman equipment division is housed in this frame and brick building on the outskirts of Syracuse. Shop and storage areas occupy the front part, while offices and the parts department are at the rear.

Equipment brought to the Winkelman shop at Syracuse for repair or overhaul, prior to the summer construction season, is lined up in the yard to the rear of the shop. Earthmovers and paving equipment predominate in this area.



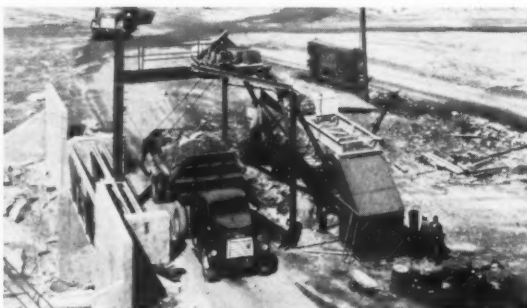
"It takes a lot of truck to handle 25- to 30-ton loads!"

— says W. B. Couch, superintendent of the Campbell Limestone Co., Beverly, S. C., in reporting on their GMC Diesels



SOME OF THE HUGE BOULDERS THAT HURTLING DOWN into Campbell's GMC's are half the size of a sedan. In fact, the specially built dump bodies are of 1-inch steel plate. And underneath is the GMC brand of super-stamina that shrugs off this kind of punishment—for years.

OFF-THE-ROAD HAULING THAT'S TOO HEAVY FOR LEGAL HIGHWAY TRAVEL is rugged business. Yet Campbell Limestone's GMC Diesels do this day after day—running 10-hour days in the summer. They've never required any pampering—even after the equivalent of 100,000 miles of this work. It's the pay-off on GMC's all-truck construction—as the world's largest exclusive commercial vehicle manufacturer can supply it.



EVEN CLIMBING THE STEEP RAMPS with their huge loads is easy for these GMC's. They've got the power reserve to keep rolling where other trucks can't make the grade. You can thank those high-torque 2-cycle Diesels for that!

GMC TRUCK & COACH—A General Motors Division

GMC—America's Ablest Trucks ½ to 45 tons

For more facts, use Request Card at page 18 and circle No. 378

(Continued from preceding page)

performance, depreciation, disposition, and related data. A complete description of the machine and its attachments is also entered on this ledger.

A code letter, designating the category of equipment, and a number assigned to the individual machine identify the various items in the equipment inventory. Such a coding system enables anyone in the office to locate quickly the records for any one of some 50 tractors and dozers, 150 trucks, 17 shovels, nearly 30 earthmovers, or any of the other pieces in the company's inventory.

Feeding the master records are a number of intermediate or temporary records, which in turn are fed by reports from the field or shop. Field reports include an "Operator's Daily Report", a "Daily Fuel Report", and an "Equipment Transfer Report". The latter gives the division office staff information on the current whereabouts of each machine. Exact hours of operation are also reported regularly to the home office.

Reports of lubrication, repairs, and parts ordered for each machine are also delivered to the records office from each job and the Syracuse shop. This information is transferred to the "Monthly Operation Record" kept on each piece of machinery, and ultimately the data is posted on the permanent master records.

Intermediate records in the division office also include a "Location Sheet", which records the job on which the rig is working, its income, and hours available for work. The information contained here is the basis for figuring equipment costs on a particular job and the depreciation of the machine in question.

There are record cards for various components, too, such as a "Tire Change Report Sheet" and a "Tire Record".

Maintenance charts

A part of its maintenance system, of which the firm is particularly proud, is a master maintenance chart showing such items as radiator capacities and the precise lubricants, filters, and tires required for each type of machine the firm owns. These charts

CONTRACTORS AND ENGINEERS



A welder in the Winkelman shop fabricates a gooseneck for the Ferguson 50-ton roller. The attachment will permit hauling the roller with a Tournapull tractor.

are prepared in the home office from equipment specification sheets and maintenance manuals, and copies are placed in the hands of job superintendents and shop foremen.

The report from the field and from the job shops is that these charts are invaluable. The part number for the exact lubricant, filter, or other required service item is given for each type of machine, and this listing saves time and also prevents errors.

Winkelman carries a parts inventory of some 10,000 or 11,000 separate items, but this represents a drastic cut in the inventory of a few years ago; like other contractors today the Syracuse firm is paring its parts inventory to a minimum. The ready availability of parts from dealers makes larger contractor inventories unnecessary.

Two sets of parts books and two sets of maintenance manuals for each type of machine are kept by the company. One set is held at the home office, the other follows the machine around.

Shop setup

Winkelman's Syracuse shop is set up to handle every kind of equipment maintenance and repair, including the major overhaul and rebuilding of engines. A shop crew, varying from 10 men in slack times to as many as 40 in times of greatest activity, works under foreman C. E. Hutchison.

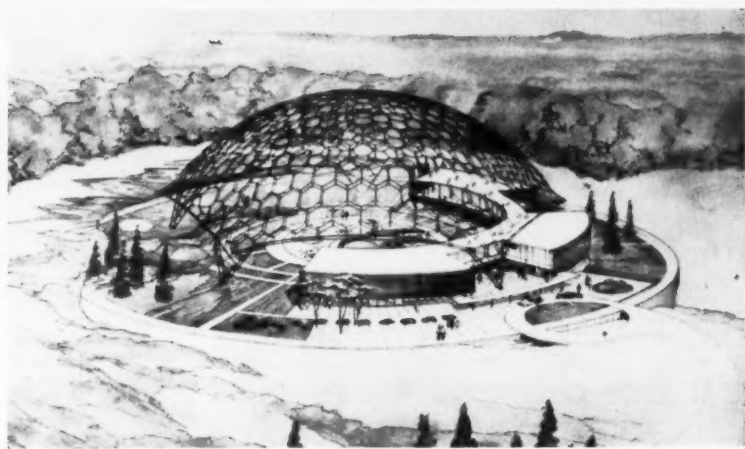
Shop equipment includes Lincoln and Hobart welding machines, Malsbary steam cleaners, a Lemco 60-ton hydraulic press, a Caterpillar hydraulic puller, an OTC mechanical puller, four Safway 3-ton overhead hoists, a Rodgers 3-ton hydraulic floor crane, a Clayton dynamometer, and various power and hand tools. An Austin-Western Hydrocrane with 5-ton capacity is used in the shop and yard.

Six lubrication trucks operating out of the shop or on projects use Balcrank lubricating equipment. Mechanics' and welders' trucks use GE and Motorola two-way radio to communicate with the shop.

Other personnel responsible for aspects of the Winkelman maintenance program include Donald B. Stephens, records manager; Al Capato, parts manager; and Jack Schrader, dispatcher.

THE END

A DRAWING of the 250-foot-diameter and 103-foot-high geodesic dome that will become the headquarters for the American Society for Metals Building, some 35 miles east of Cleveland, Ohio. Scheduled for completion this fall, the \$2 million structure will be composed of 11-foot aluminum hexagon sections.



4-Wheel Drive...4-Wheel Steer New Napco Tractor goes where others fail

With its powerful 4-Wheel traction, the Napco CRAB Tractor operates easily in treacherous footing where an ordinary wheel tractor would be helpless.

Traction like a crawler. The exciting 4-Wheel drive CRAB has approximately twice the drawbar pull of an ordinary wheel tractor of the same engine horsepower. This *extra* traction allows it to work efficiently in axle-deep mud, sand, or snow... on

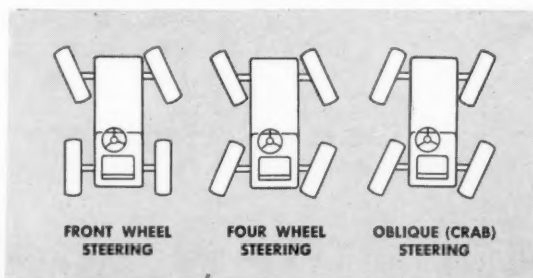
jobs which previously called for a heavier, expensive crawler tractor.

Unmatched versatility. But while the CRAB offers crawler-like traction, it has all the advantages of a standard wheel tractor... and more, too. Highway speeds up to 25 mph save time and cost in moving from one job to another, while the unique 4-Wheel Steering feature allows it to maneuver in tight areas where conventional tractors couldn't operate. Inside turn-

ing radius is only 6½ feet!

Other revolutionary features. Torque converter... heavy-duty axles... hydraulic reversing clutch... power steering... 4-wheel power brakes... option of planetary axle and front-mounted PTO.

Ask for demonstration. You'll have to see the CRAB in action to believe it. See your nearest Distributor or write to NAPCO... today!



Just flip a lever on the dashboard to instantly select the type of steering you want. Easier than shifting gears.

For more facts, use Request Card at page 18 and circle No. 379

Traction like a crawler... Versatile as a Wheel Tractor

NAPCO CRAB TRACTOR



Manufactured by Napco Industries, Inc., Minneapolis 11, Minnesota
Largest supplier of 4-Wheel Drives to the major truck manufacturers

Maintenance

"played by ear"



L. V. Massengale, Jr. (standing), Whittle equipment superintendent, and Bill Davidson, who supervises the actual maintenance operation, confer with the operator of a Marion dragline on the rig's performance.



"We don't think we're large enough at this point to need a formal maintenance program with all the paper work it involves; you might say we sort of play it by ear. But if we get much bigger—or if our present system begins to show holes—you can bet we'll set up a preventive maintenance program."

These words of L. V. Massengale, Jr., equipment superintendent, express the thinking on maintenance of the Whittle Contracting Co., an 8-year-old Dallas firm that does between \$4 and \$5 million worth of heavy engineering and concrete work annually in the Southwest.

But there's more to the story than the words tell. The fact that the greater part of Whittle's work is in Dallas County or nearby makes it possible for management to keep a close personal check on equipment.

In fact, this personal check is a kind of substitute for the more formal system of regular checks and records. Massengale and his assistant know every piece of Whittle machinery well, and the majority of their time is spent in visiting the jobs and inspecting the equipment.

The heavy artillery in the Whittle equipment lineup is a fleet of 17 draglines—mostly Koehlings—ranging in capacity from 3 yards down. Other machines include tractors, trucks, trailers, concrete-handling equipment, compressors, and tunneling equipment. The equipment inventory is valued at more than \$1 million.

The equipment is owned by a separate corporation, Whittle Construction Co., Inc., and rented to the contracting firm for the various jobs. R. D. Whittle, president of both firms, explains that this arrangement allows him to isolate equipment rentals from job costs, thus making cost figuring a simpler process.

Work is concentrated

Specializing in bridges, tunnels, and heavy concrete structures such as monolithic sewers, spillways, and large storage tanks, Whittle Contracting works mostly in the south central and southwestern states, although it currently has a couple of jobs under contract in the upper Midwest. More often than not, however, the majority of its jobs will be within a 60-mile radius of Dallas, making it possible for the home shop crew to visit jobs frequently for necessary service work.

R. D. Whittle has been in contracting since 1930. After working up to superintendent, he became a partner in a construction firm in 1936. He founded the present company that bears his name in 1949, and one year later set up the separate corporation to own and lease the equipment.

Definitely a field rather than a

"I find
it pays
to be choosy."



"And I find it pays more than ever to use Dodge Reports for this reason:

"With competition the way it is, finding the kind of job you want to bid on means you have to know about every possible opportunity you can. You've got to know who's designing it, building it and, if there's going to be competition, what sort it is."

Dodge Reports tell you daily just what you want to know about any kind of new construction. They bring you up-to-the-day progress reports from the time a project is contemplated until the sub-contracts are let. You know without wasting your time the kind of people you would be dealing with and competing with—whether it's your

kind of job, or not. And with Dodge Reports you won't miss any good bets either.

That's why successful suppliers and contractors by the thousands are using Dodge Reports to help them locate and select the opportunities they know they can make a profit on. You, too, can profit by using Dodge Reports to find the business opportunities you need and want wherever you operate in the 37 Eastern States.

Send the coupon today for your copy of "Dodge Reports—How to use them effectively," including the famous "Dodge Specification Form" that helps you choose the kind, size and location of the jobs you'd like to have.

F. W. Dodge Corporation, Construction News Division, Dept. 7068
119 West 40th Street, New York 18, N. Y.

I want to know how to get more new construction business. Please let me see some typical Dodge Reports for my area. I am interested in the markets checked below:

- ☐ House Construction ☐ General Building
☐ Engineering Projects (Heavy Construction)

Area _____

Name _____

Company _____

Address _____

City _____ Zone _____ State _____



For more facts, use coupon, or Request Card at page 18 and circle No. 380

desk contractor, Whittle personally oversees the entire operation of his company. He visits each job frequently, knows intimately the details of each job as it progresses, and consults often with Massengale on maintenance or the purchase of new equipment.

Whittle has definite ideas on retiring machinery. He believes that a trade-in while the machine "still has a lot of value" beats operating to the point where repair costs are high. "After all, payments on new equipment don't run any more than repair costs—and downtime is that hidden extra expense which sneaks up on you."

This contracting firm is a family partnership between Whittle; his son, R. N. Whittle, who heads the estimating operations; and Massengale, a son-in-law. As equipment superintendent, Massengale is responsible for dispatching, maintaining, and servicing the entire equipment inventory.

Equipment personnel

Working with Massengale are Bill Davidson, who looks after the actual maintenance operation, and W. P. Allen, who is in charge of the shop and equipment office. Whittle himself takes the responsibility for consigning machines to the various jobs, and for this role he must know where each machine is working, what it is doing, when it will be available for use elsewhere, and what sort of performance it is giving.

Massengale and Davidson have mobile "offices"—Chevrolet ½-ton pickups equipped with RCA two-way radio—for their field work. In a single day they may separately visit half a dozen jobs, sometimes meeting at one by prearrangement to confer on an equipment problem.

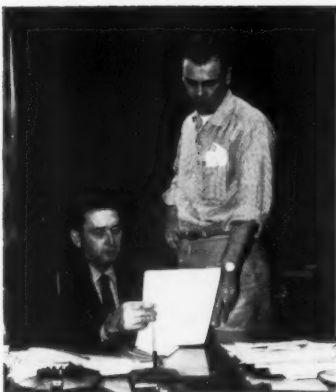
Massengale has a pilot's license, and this comes in handy when he has to visit a job farther away. He has his choice of two planes which the company owns: a De Havilland Dove six-passenger craft and a Cessna 180 four-passenger model.

Other mobile units in the maintenance lineup include three mechanics' trucks (one International and two Chevrolets), two welders' trucks (also Internationals), and three International 195's to haul equipment to the job or back to the shop. The welders' trucks are equipped with Lincoln 200-amp machines.

Whittle uses no lube trucks, relying instead on oilers, mechanics, and operators for this operation. Davidson personally looks after such extraordinary lube work as winterizing of machines.

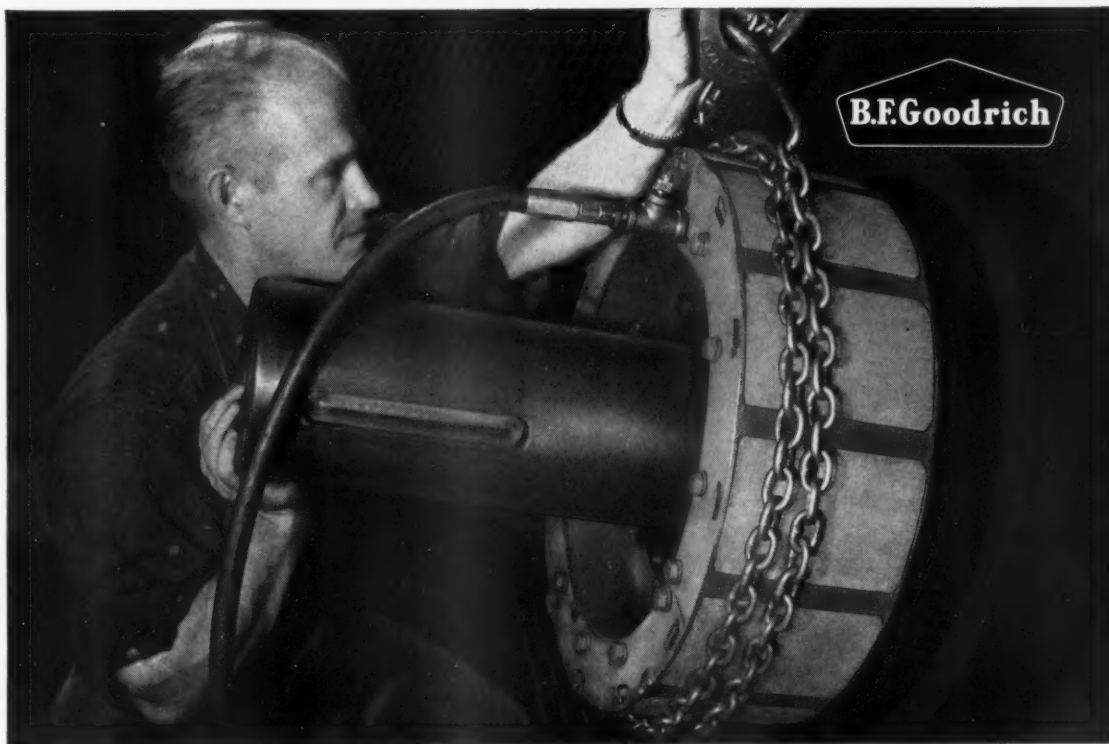
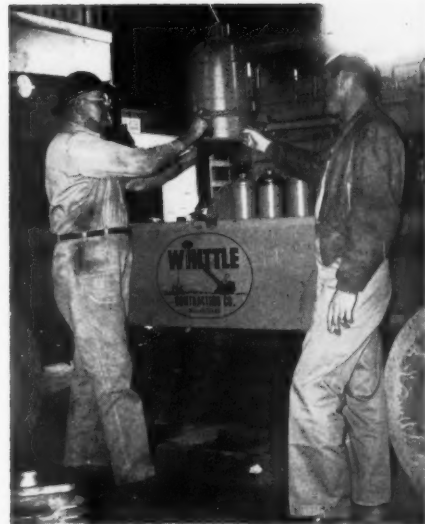
The job force at Whittle's Dallas headquarters includes two heavy-duty mechanics, a man on trucks, another man on pumps, and two welders. All are trained to double in

(Continued on next page)



Equipment superintendent Massengale checks some maintenance cost figures with R. D. Whittle (seated), president of the firm. Whittle himself keeps close check on equipment and its performance.

W. P. Allen (right), who supervises shop work and holds down the shop office when Massengale and Davidson are in the field, discusses a compressor with a shop mechanic.



New B.F. Goodrich Hi-Torque Brake STOPS TWICE AS FAST



Continental-Woolridge self-propelled Dumper and Scraper Models CWD-214, CWD-321, CWD-221, CW-215, CW-220, and high-capacity tractor-drawn Scrapers, have capacities up to 30 yards struck and 39 yards heaped. 22" x 7" B.F. Goodrich Hi-Torque Brakes provide maximum stopping power.

HERE'S THE ONLY heavy duty brake that will give you the reserve stopping power you need for today's new, larger off-road equipment. In one operational test, the B. F. Goodrich Hi-Torque Brake stopped a popular 24-ton capacity truck at a rate of 18 Ft/sec². This same truck, equipped with conventional two shoe brakes, achieved a deceleration rate of only 7 Ft/sec².

Full circle stopping power is the main reason for the superiority of the B. F. Goodrich Hi-Torque Brake. Its exclusive design gives more lining contact area than any other drum brake. An hydraulic expander tube actuates each of 12 shoes—allowing them to follow drum eccentricities with equal lining pressure. This gives a smoother, faster, safer stop with much less chance of fade.

What is even more important to most operators, the B. F. Goodrich Hi-Torque Brake is easy to service. It requires no lubrication—and lining changes can be made with standard hand tools. On many jobs where ordinary brakes require excessive down time, the Hi-Torque Brake will let you operate with no down time.

Find out how your operators can speed up cycle time and still maintain better braking control. Free booklet—The B. F. Goodrich Hi-Torque Brake—gives specifications and test results. Write B. F. Goodrich Aviation Products, a division of The B. F. Goodrich Company, Troy, Ohio.

B.F. Goodrich Hi-Torque brakes

For more facts, use Request Card at page 18 and circle No. 381



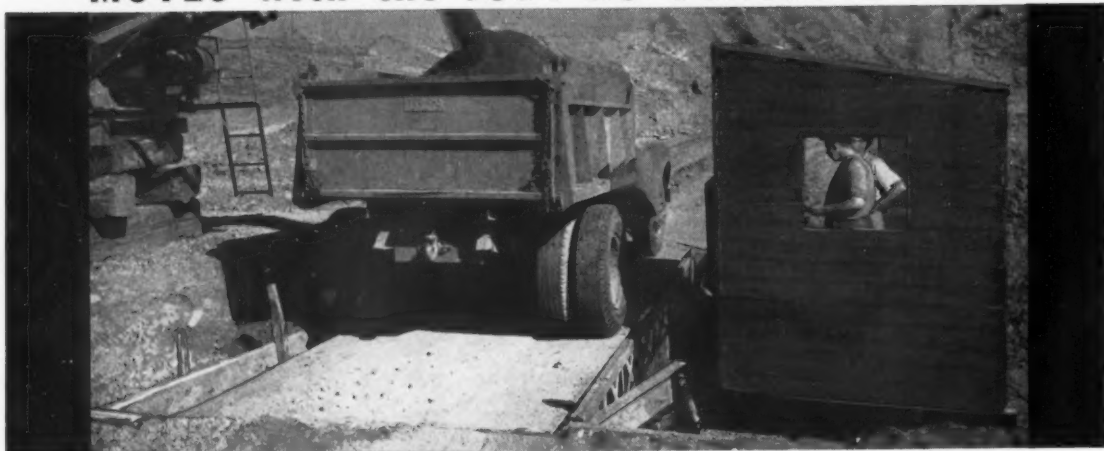
This 50 x 100-foot concrete-block building houses the Whittle maintenance shop. The modern building in the background (right) houses the business, engineering, and estimating offices of the contracting firm.



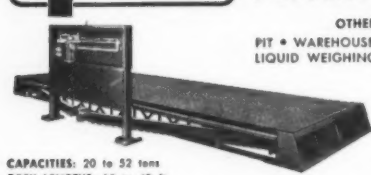
A section of the equipment yard which occupies several acres to the rear of the Whittle shop. Because most of its jobs are nearby, the company can move a piece of equipment to a project or back to the yard in a matter of hours.

(Continued from preceding page)

MOVES with the JOB! NO CONCRETE PITS!



THURMAN Portable Truck Scale



CAPACITIES: 20 to 52 tons
DECK LENGTHS: 18 to 43 ft.

OTHER THURMAN SCALES:
PIT • WAREHOUSE • INDUSTRIAL • WHEELBARROW
LIQUID WEIGHING • BATCHING • AUTOMATIC

Sets up in minutes... accurate, precision weighing *on-the-site*. Complete steel deck construction. Low original cost... no maintenance costs. Can be installed as a pitless scale. Saves pit costs. WRITE OR WIRE FOR BULLETIN 601

Precision Scales

THURMAN Since 1918

THURMAN SCALE COMPANY, 156 N. 5TH STREET
COLUMBUS, OHIO

For more facts, use Request Card at page 18 and circle No. 382

Guaranteed... MORE DEPENDABLE,
LOWER COST WATER
HANDLING ON ANY JOB!



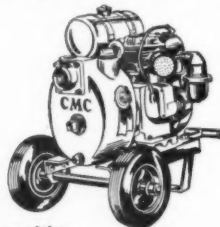
Here are pumps that have proven—on job after job, day after day—that they can take the most rugged use with the least maintenance. This spells BIG DEPENDABLE performance at LOWEST cost. WRITE TODAY FOR NEW FREE CONTRACTORS PUMP CATALOG.

CONSTRUCTION MACHINERY CO.,
WATERLOO, IOWA

PUMPS

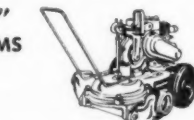
For more facts, use Request Card at page 18 and circle No. 383

DUAL PRIMERS with high lift, faster priming



Capacities
4,000 to 240,000 GPH

2", 3" & 4"
DIAPHRAGMS



2", 3", 4", 5" & 6"
HI-PRESSURE Pumps

brass, however, so that the shop always has a man on hand to send out to a job.

The shop is a 50x100-foot concrete building with a concrete floor. It is heated by three Carrier heaters with a capacity of 104,000 Btu per hour each.

Adapt machines

Because of the limited shop space, Whittle does no engine rebuilding. This work and some other major overhauling are farmed out. The shop force does quite a little adapting of machinery to Whittle's particular needs, however; dump bodies, for example, are often reinforced. A considerable amount of the boom the company uses is also fabricated at the shop.

One job of adapting machinery has entailed converting some of the smaller draglines and most of the compressors to operate on butane gas rather than gasoline. According to Massengale, this provides a cleaner operation in the engine and cuts down appreciably on fuel bills.

All equipment brought to the shop for repair is first steam-cleaned with a Malsbary machine. Inside the shop, a Ford Tribler 3-ton hoist handles components and smaller pieces of equipment. A yard crane consisting of a Hughes-Keenan crane mounted on an International TD-14 works around the shop area.

The company maintains only a small parts inventory, since there are a number of distributors only minutes away from the shop.

Whittle has seven acres in an outlying industrial section of Dallas. Alongside the shop are a modern brick building, housing the business offices of the company, and a large warehouse for storing components. A large equipment yard is available for storing machinery. THE END

Hyster acquires Martin

Hyster Co., Portland, Ore., has acquired the Martin Machine Co., of Kewanee, Ill. Hyster, with no change in name or in operations, is now a Nevada corporation. It has the Martin Trailer Division as a part of its Tractor Equipment Division headquartered at Peoria, Ill.

CONTRACTORS AND ENGINEERS

Convention calendar

June 9-12 National Materials Handling Exposition

Eighth Annual Exposition, Public Auditorium, Cleveland, Ohio. Clapp & Poljak, Inc., NMHE, 341 Madison Ave., New York 17, N. Y.

June 11-14 National Society of Professional Engineers

Annual Meeting, Chase-Park Plaza Hotels, St. Louis, Mo. Kenneth E. Trombley, NSPE, 2029 K St. N. W., Washington 6, D. C.

June 15-18 American Public Works Association

Western Area Public Works Conference, Cortez Hotel, San Diego, Calif. D. F. Herrick, executive director, APWA, 1313 E. 60th St., Chicago 37, Ill.

June 15-19 American Society of Mechanical Engineers

Semi-Annual Meeting, Statler Hotel, Detroit, Mich. ASME, 29 W. 39th St., New York 18, N. Y.

June 17-18 Bituminous Concrete Producers Association

Meeting, Thousand Island Club, Alexandria Bay, N. Y. Matthew L. Fitzgerald, executive secretary, BCPA, DeWitt Clinton Hotel, Albany, N. Y.

June 20-22 Maryland Association of Engineers

Meeting, Commander Hotel, Ocean City, Md. L. B. Kravetz, executive secretary, MAE, 314 Municipal Bldg., Baltimore 2, Md.

June 22-27 American Society for Testing Materials

Sixty-first Annual Meeting and Apparatus Exhibit, Hotel Statler, Boston, Mass. Fred F. Van Atta, assistant secretary, ASTM, 1916 Race St., Philadelphia 3, Pa.

June 23-27 American Society of Civil Engineers

Convention, Hotel Multnomah, Portland, Ore. H. Loren Thompson, general chairman, ASCE, P. O. Box 508, Portland 7, Ore.

June 30-July 2 American Society of Landscape Architects

Meeting, Shoreham Hotel, Washington, D. C. Henry Schultheis, general chairman, ASLA, Mt. Zephyr Drive, Alexandria, Va.

June 30-July 2 School for Highway Superintendents

Meeting, Riley-Robb Hall, Cornell University, Ithaca, N. Y. James W. Spencer, highway research and extension engineer, Department of Agricultural Engineering, Riley-Robb Hall, Cornell University, Ithaca, N. Y.

August 25-29 National Shade Tree Conference

Conference, George Vanderbilt Hotel and Public Auditorium, Asheville, N. C. L. C. Chadwick, secretary-treasurer, NSTC, Department of Horticulture, Ohio State University, Columbus, Ohio.

Road-job film shows P&H soil stabilizer in action

A new 16-mm color movie with sound, entitled "One Third Mile Per Hour", has been released by Harnischfeger Corp. Filmed during road-building operations in Michigan, the 15-minute movie portrays construction of a soil-cement roadway with a P&H single pass soil stabilizer. Copies may be obtained by writing to Soil Stabilizer Division, Harnischfeger Corp., 4400 West National Ave., Milwaukee 46, Wis.

The U. S. Coast and Geodetic Survey has started work to establish control points along the Interstate System in Pennsylvania, to measure distances in design work.

For more facts, circle No. 384 →

THE REMODELED BRAZILIAN PLANT of Gardner-Denver Co., Quincy, Ill., now has 22,000 square feet of modern manufacturing and office space. Located on the outskirts of Rio de Janeiro, the newly expanded plant produces parts for, and assembles, rock drills, pumps, compressors, and air tools for mining, construction, and general industry in South America.



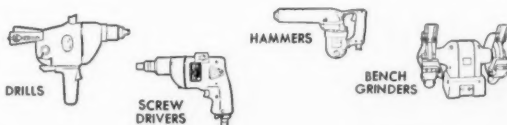
Speed where it counts... 60% faster material removal!

Improved Black & Decker 7" Sander-Grinder is POWER-BUILT to work harder, longer, faster!

Tests show improved B&D 7" Heavy-Duty Sander-Grinder maintains greater speed under maximum load for 60% faster material removal than competitive tools. B&D Sander-Grinder also runs cooler, allowing longer continuous operation. Speeds up sanding, grinding, cutting, brushing equally well

with proper attachments. Smooths welds, removes rivets, cuts off studs fast. Removes paint, rust and scale from tanks and boilers.

Perfect overall balance and light weight assure less operator fatigue. Blower directs exhaust air away from operator. Comes complete with regular pad and Kool-flex pads. Call your Black & Decker distributor for a free demonstration. Or write today for free catalog to: THE BLACK & DECKER MFG. Co., Dept. 1306, Towson 4, Maryland. (In Canada: Brockville, Ontario.)

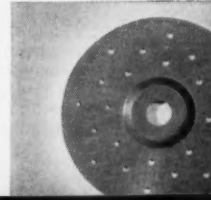
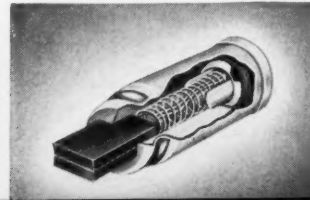
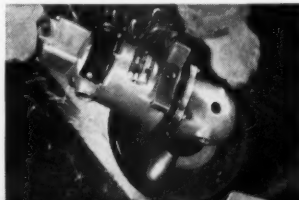
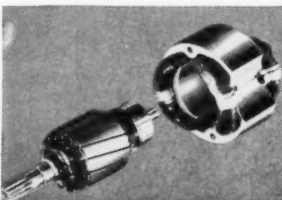


EXCLUSIVE POWER OUTPUT!
Specially-built B&D universal motor guarantees continuous power, 90% more than previous models.

EXCLUSIVE MOTOR PROTECTION!
New Thermalze wiring (for motor winding) minimizes problem of overloading, protects motor from overheating, stalling.

EXCLUSIVE LONG - LIFE BRUSHES!
New "twin-contact" brush design improves overall tool operation. Increases brush life by at least 50%.

EXCLUSIVE KOOL-FLEX PAD
Perforated to make sanding discs run cooler. Less chance of burning material. Gives better tool balance.



Leading Distributors Everywhere Sell



Black & Decker®

Portable Electric Tools—Power-Built to Last

With the *big* firm . . .

Maintenance is *big* business

When your annual work volume ranges upwards of \$50 million, your work covers half the United States, and your equipment investment is in the neighborhood of \$13 million, maintenance assumes pretty sizable proportions.

Moreover, the expenditures of money, manpower, and time for this important item must be geared to efficiency of operation. Among other things this means proper organization and delegation of responsibility, strategic location of maintenance centers, and an effective system of recording and comparing costs.

S. J. Groves & Sons Co., to which the statistics in the first paragraph refer, has had more than half a century to formulate its maintenance program. Today one of the nation's largest heavy and highway contractors, the firm has a tightly knit, efficient maintenance system to match its extensive operations.

Maintenance program

Headquartered in Minneapolis, Groves works primarily in the states east of the Mississippi Valley, as well as overseas. Permanent branch offices are located in Syracuse, N. Y.; Woodbridge, N. J.; Ann Arbor, Mich.; and Springfield, Ill. Each branch office has a permanent maintenance shop, outfitted to handle everything from the most routine lubrication job to the most complex engine-rebuilding project.

Responsibility for the company's entire maintenance program is centered at Minneapolis, and all purchases of new equipment are handled from this office. C. T. Robertson, equipment manager, spends a good deal of his time traveling to branch offices and projects, personally studying the equipment requirements of the company.

The maintenance program itself is under the direction of Dave Armstrong, equipment superintendent, who also keeps on the move the year round.

All records on equipment costs, operation, depreciation, repair, and

other data are kept at the Minneapolis offices of the equipment division. Daily, weekly, and monthly reports are mailed in from branch and field shops, and this information is posted on more permanent records. The Minneapolis office also compiles com-

parative cost figures from this field information.

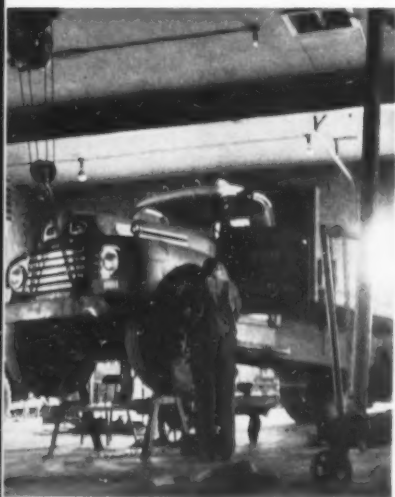
The Minneapolis shop

The equipment division has its own offices in a wing of the Minneapolis shop, which stands on a 4½-acre plot



During construction of vital Interstate Highway section, Campanella and Cardì's 22½-ton Mack dumpers once again proved that they are built to get the tough jobs done, with little or no down time and only routine servicing.

Vital highway links



A mechanic works on a Ford flat-bed truck at one end of the Groves shop. The front end of the truck is held up by a Yale 3-ton electric hoist mounted on A-frames for portability.



Maneuverability and ease of handling pay off in the tight spots. On the Division Street project in Pawtucket, R. I., space was at a premium. Spotting, dumping, or traveling over busy city streets, the combination of Mack maneuverability, and the positive traction provided by Mack's exclusive Balanced Bogie with Power Divider, materially speeded up work cycles on this project.



maintenance

on the outskirts of the city. Built in 1924, the shop has been enlarged twice—in 1942 and again in 1952—to provide a total office, repair, and parts area of over 25,000 square feet. A separate building, measuring 80 by 35 feet, was added in 1952 to house



Groves' Minneapolis shop always presents a neat appearance. In center is the cleaning and painting building. Parts and storage areas are at extreme left; equipment division offices in the brick wing at extreme right.



"We finished off the Interstate Highway job in record time, thanks to our Macks," Campanella and Cardi set new records for a job of this type, which included relocating the channel of the Big River, excavating for bridge construction, and hauling in heavy materials.

Crushed to completion

As the trucks go . . . so goes the job." That's what Campanella and Cardi Construction Co. of Providence report. They credit their 55 Mack trucks with maintaining their reputation for record-time contract completion.

They'll tell you that with Macks pacing the haul, the hauling-dumping cycle proceeds on-the-double . . . shovels operate at full capacity . . . own time is held to a minimum.

Husky Mack dumpers take the day-in, day-out loadings delivered by the tons of rock and earth dropped from the shovels . . . and keep coming back for more.

Campanella and Cardi will tell you that Mack dependability speeds their entire operation. So will the Mack user nearest you. Get his name from your Mack branch or distributor. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

MACK
first name for
TRUCKS

equipment-cleaning and painting operations. The yard has its own railroad spur.

The over-all impression here is one of unusual tidiness for an equipment yard and shop. The concrete-block buildings are painted a light gray, equipment on hand at the moment is lined up neatly in the yard, and there are no unsightly piles of parts or refuse.

Groves uses a variety of mobile units in conjunction with repair work at the shop and in the Minneapolis area. These include two 27-ton low-bed trailers, a Transport Trailers unit and a La Crosse, pulled by International L-190 diesel tractors. The low-beds are used to haul equipment to and from the shop for overhaul or new assignment. There are also three Ford F-750 flat-bed trucks, three 1/2-ton pickups (also Fords), and at least one shop-fabricated boom truck.

A Hyster fork-lift truck and two Tournacranes are used in the shop and yard to lift equipment and heavy components.

Inside the shop, Groves has an impressive array of maintenance machinery and tools. For lifting and handling equipment, there are a P&H Hevi-Lift 3-ton electric overhead hoist, a Cyclone 10-ton electric overhead hoist, a Peerless 5-ton hoist, and a Yale 3-ton electric hoist mounted on A-frames for portability.

Presses include a Rodgers 250-ton horizontal hydraulic unit, a shop-assembled 200-ton horizontal press, also hydraulic, and a Dake 150-ton vertical hydraulic unit. Barnes radial drill presses are also used, as are Piffeld, South Bend, and Cisco lathes, and an Owen milling machine.

A Lincoln Idealarc 300-amp dual-



The Minneapolis shop force has assembled more than half a dozen of these boom trucks for handling equipment and components at the company's branch and field shops. The boom and 1/2-ton ballast bumper in front are fabricated in the shop and mounted on a truck chassis.

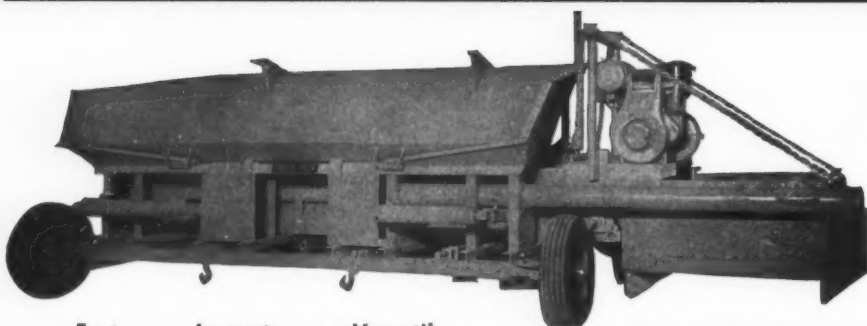


Earthmoving equipment awaiting consignment to a job is lined up in the huge yard at Groves' Minneapolis maintenance center. The yard, maintenance shop, and office building occupy a 4½-acre plot.



Wheel tractors, a front-end loader, and tires are prepared for transport to a job from the Minneapolis shop. The hauling unit is a Transport Trailers 27-ton low-bed pulled by an International L-190 tractor.

High Production at Low Cost!



Fast . . . Accurate . . . Versatile

- For
- ROAD WIDENING
- ROAD SHOULDER
- TRENCH FILLING JOBS

Spreads Sand, Stone and Hot Mix!

Word is spreading fast about the effectiveness and economy of this machine. Wisconsin 9 h.p. engine powers conveyor belt to rapidly discharge aggregate or asphalt from rugged 8 ft. hopper. Heavy steel plate side box with strike-off blade is adjustable from 2-5 ft. Rubber-tired wheels swing parallel to hopper for easy towing. **POWER-PACK** has a simple hitch for any standard dump truck or trailer dump. Can be adjusted for left or right discharge. **POWER-PACK** lays material uniformly and with clean edges—up to 180 tons per hour—keeping hand work to a minimum. Only one operator is needed. **POWER-PACK** attachments available for speedy backfilling of curbing and trenches.

Write or phone for full details—You'll be glad you did!

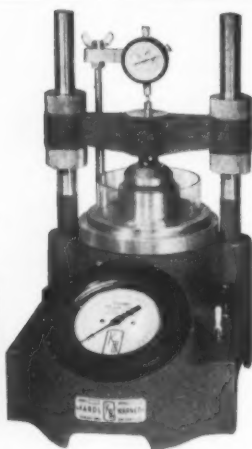
POWER-PACK CONVEYOR CO.

(Glenville 1-7670)

13910 ASPINWALL AVE. CLEVELAND 10, OHIO

For more facts, use Request Card at page 18 and circle No. 386

Unmatched for Efficient Consolidation Soil Testing...



- Infinite choice of loads
- Load applied instantly without shock
- Capacities from 750 lbs. to 10,000 lbs.
- Simplified controls—one man operation
- Air operated—no dead weights
- Compact . . . light weight . . . portable

For information about the Conbel and other modern K-W soil testing equipment for triaxial, unconfined compression, and direct shear testing . . .

Write for Bulletin 50-A

TINIUS OLSEN TESTING MACHINE CO.

2130 Easton Road

Willow Grove, Pa.

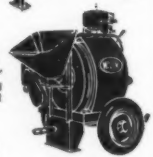
For more facts, circle No. 387

MULLER MACHINES

PLASTER AND MORTAR MIXERS
5 sizes 2 to 12 Cu. Ft.
Electric or gasoline
Power throw-out on
smaller models, disc
clutch on larger



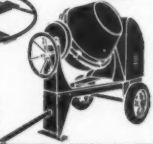
3½ Cu. Ft.
NON-TILTING
CONCRETE MIXER
Drum 36" dia. x 27"
wide B & S Air-cooled
engine 4.5 Hp. at
2700 RPM



4 BLADED
POWER TROWELS
24", 29", 36", 44" dia.
B & S Air-cooled
engines. Clutch and
speed controls on
handle



CONCRETE MIXERS
TILTING TYPE
3, 3½, and 6 Cu. Ft.
(mixed concrete)
Electric or gasoline
Timken Bearings



for high output
with low price
and
maintenance

Simple Design, Fewer Components; large scale production; a half-century of experience; explain the leadership of Muller Machines. Muller's low prices and low maintenance costs make Muller Machines the best investment for the contractor.

Ask for prices and name of local dealer.

MULLER MACHINERY COMPANY, INC.
Metuchen 14, N. J. Cable Address: MULMIX

For more facts, circle No. 388

(Continued from preceding page)

control welding machine, as well as a Smith and a GE welder, is used in the shop. In the painting and cleaning building, a Drill hot water cleaning and de-greasing machine is used on all equipment brought to the shop for repair, and DeVilbiss painting equipment is used to give machinery a new coat.

The boom truck mentioned earlier is one of half a dozen the Groves shop in Minneapolis has fabricated for the various branch maintenance centers. The boom itself and a half-ton ballast box are put together in the shop and installed on a truck body. The shop also buys fabricated tanks and installs them on Ford F-800 trucks for water wagons. The sprinkling system for these units is made right at the shop.

All of the Groves shops keep a number of rebuilt engines and other components on hand for installation when a machine breaks down on the job, thus preventing costly downtime.

Incidentally, Groves believes in both preventive maintenance and extensive repair and rebuilding. The company does not retire machinery lightly. This does not mean, however, that the company has a lot of worn-out machinery in operation; when further repair or overhauling will not pay, the machine is replaced.

Currently, Groves is in the process of inaugurating a new system for its master mechanics. Six pickup trucks are being equipped with Dictaphone machines, and the mechanics who travel to the jobs in the field will dictate their reports right in their trucks. The belts will then be mailed back to the shops. This system will save the mechanics from extensive paper work on the project.

Personnel

Permanent personnel at the Minneapolis maintenance center includes 20 mechanics, three low-bed drivers, two painters, two parts men, two foremen, and six office workers. Phil Probelksi is office manager of the equipment division, Jim Corcoran is in charge of records, and Martin Stores, who holds the record for number of years service (45) with Groves, is chief shop foreman.

THE END

CONTRACTORS AND ENGINEERS

Drain out anti-freeze to lower equipment costs

Operators of truck and heavy-machinery fleets, who fail to properly service engine cooling systems for hot weather, may find maintenance costs running high.

To avoid expensive repairs and breakdowns of equipment, E. I. du Pont de Nemours & Co., Wilmington, Del., suggests that cooling systems be drained of last winter's anti-freeze, including the so-called permanent types. "Permanent" anti-freeze means for the entire season only.

Corrosive acids may form in all anti-freezes after one season. These solutions attack the vital parts of the cooling system, producing rust, which can clog up the radiator and the narrow water passages of the engine block. When the flow of coolant is cut, the engine quickly overheats. Overheating can cause serious engine damage such as scored cylinders, warped cylinder heads, and burned valves.

To assure efficient operation during hot weather, a four-point program should be followed: drain out and discard winter-worn anti-freeze solutions from the radiator and engine block; clean and flush the cooling system, using a chemical cleaner, if necessary; check hoses and other cooling system parts for leaks or wear, and repair or replace where necessary; and refill the radiator with fresh water, adding a chemical rust inhibitor.

Thew Shovel elects Blauvelt controller

W. W. Blauvelt, for the past year director of business planning and control for the Thew Shovel Co., Lorain, Ohio, has been elected controller of the firm.

Prior to his association with Thew, Blauvelt had been vice president and general manager of Byers Machine, Inc., Ravenna, Ohio. Byers Machine was formerly a wholly-owned subsidiary of Thew, and merged with the parent company in March of this year.

Weed-elimination program on Pennsylvania pike

A program is under way on the Pennsylvania Turnpike to rid the highway of obnoxious weeds and brush growth from the Ohio line to the Valley Forge interchange. The work is expected to develop a sound turf and eliminate ragweed, poison oak, and poison ivy.

MacMahon Bros., Tenaflly, N. J., was awarded the \$23,330 contract to furnish all labor, materials, and equipment necessary to spray along the right-of-way area, median strip, and guardrails. A total of 326 miles will be sprayed.

One application of chemical herbicides has been finished; two more will be made this month.

Weekends are said to be the most dangerous time on U. S. highways. In 1957, more than half of the fatal accidents occurred on Fridays, Saturdays, and Sundays.

FAST ON-THE-JOB REPAIRS of equipment are easy for the M. H. Golden Construction Co., San Diego, Calif. The truck carries parts, tools, and welding equipment. A mechanic, checking with the central office by radiotelephone, is ready at a moment's notice to move on to another job. In the background is an International TD-24 crawler.



27 ton "EUC" REAR-DUMP

*It's new...but
JOB PROVED!*



325 or 335 h.p. . . . Torqmatic Drive . . . 18.00 x 25 tires

Model R-27 is a new size in the complete line of Euclid Rear-Dumps—rated payload is 54,000 lbs. This off-highway hauler incorporates the job-proved components which have made Euclid Rear-Dumps the outstanding choice of contractors, mines and quarries.

With either 325 h.p. GM diesel or 335 Cummins engine, Allison Torqmatic Drive makes maximum use of the power for faster hauling cycles. Converter lock-up in the 4-speed Torqmatic permits 34 mph speed with full payload and efficient performance on long, high speed hauls.

Standard 18.00 x 25 tires on all four wheels assure the traction and load carrying capacity needed for moving 27-ton payloads on tough hauls. Standard body is rated at 18 cu. yds. struck—quarry type body is also available. The R-27 is equipped with oil retarder for safer, more economical braking on jobs with steep down-grades on the loaded haul.

See your Euclid dealer for detailed specifications on this new 27-ton Rear-Dump . . . it's a good example of the advanced design that makes Euclid your best equipment investment.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

A complete line of Rear-Dumps—10, 15, 18, 22, 27, 40 and 50 ton capacities, also semi-trailer models of 12, 22 and 35 ton payload—to fit any job.



EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE



men

Daring men work high on water tank

Six-man crew takes all precautions as work goes on high above ground on water tank for military base

A small, well trained crew and a good superintendent are prerequisites when work has to be done at 100-foot heights for a new water tank. The job takes a super who knows his work and knows his men.

Chicago Bridge & Iron Co.'s Tom White, who has built many tanks in his 30 years with the firm, and who has been superintendent for CB & I

for the past 11 years, claims that there is no great problem to putting up a tank. "It's just a matter of taking one step at a time", he says. "I try to take it easy and not press my men. That way the job gets done smoothly and nobody gets hurt."

Most of the jobs have gone smoothly for White. His crew has worked without a lost-time accident for five years and has never had a fatality. He has put up tanks of all shapes and sizes in this country, as well as in Africa, Arabia, and Turkey. Each job takes a crew with know-how, and the importance of the men to an entire job is emphasized by the safety precautions enforced.

These working principles are graphically demonstrated by work on a 1/4-million-gallon tank at Marshall Field, Fort Riley, Kans., under the supervision of the Kansas City District of the U. S. Army Corps of Engineers.

Whenever possible, men wore safety belts that did not impede their movements, and which were hooked to cables. Safety lines were stretched between stanchions of the tank as the work moved higher. Every man wore a safety hat at all times. And when men had to make welds high in the air, a fire hose was hooked up and held on standby in case flying sparks set anything ablaze.

Part of improvement project

The tank is actually part of a larger project to improve facilities at Marshall Field. The general contract, held by Star Industries, Wichita, Kans., called for construction of a hangar and hardstand as well as the water tank. Star Industries did the foundation work on the tank and subbed the steelwork to Chicago Bridge & Iron. The superstructure work took 6 weeks. For the CB & I crew, the tank did not represent an unusual job.

The Horton tank has a double ellipsoidal shell that is supported by six outer legs and one central riser. The lowest part of the 250,000-gallon tank is 100 feet above the ground. A 6-inch inlet line and a 16-inch outlet line serve the tank at the base of the center riser. An altitude valve maintains a fixed level of water in the tank.

The legs and riser of the tank rest on separate reinforced-concrete pedestals which, in turn, rest on concrete pads. The anchor bolts extend through the pedestal and are welded to the reinforcing in the pad. The supporting legs of the tank rest on steel base plates which are grouted into place on top of the pedestal.

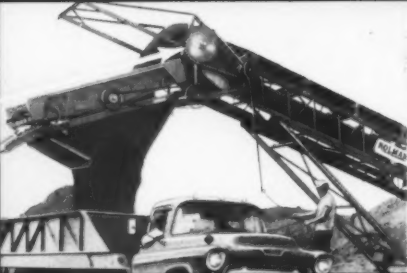
Erection

The key piece of equipment in the erection of the tank was a derrick perched on top of the center riser.

DIAMOND EQUIPPED

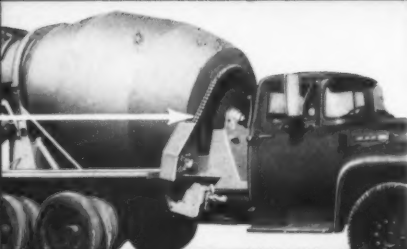
means more time **ON THE JOB**

CONVEYOR
DRIVE



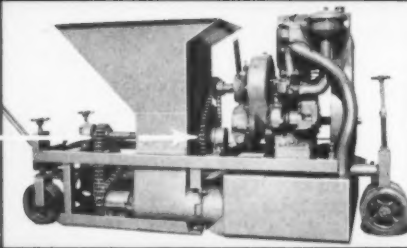
KOLMAN Portable Conveyors

DRUM
DRIVE



WILLARD Concrete Machinery

HOPPER
DRIVE



ETNYRE Automatic Curb-Pavers

● To meet the rugged requirements of highway and building construction, KOLMAN, WILLARD, ETNYRE and many other leading equipment builders specify DIAMOND Roller Chain for drive assemblies.

● DIAMOND drive chain resists abuse, absorbs the impact of shock loads . . . delivers smooth, dependable power day after day.

● Your DIAMOND Distributor has all types and sizes of roller chain in stock, ready for immediate delivery. To find his name, look in the Yellow Pages of your telephone directory for "Chains" or "Chains, Roller" . . . or write to factory for latest catalog and address of your nearest DIAMOND Distributor.

DIAMOND CHAIN COMPANY

Subsidiary of American Steel Foundries
402 Kentucky Avenue, Indianapolis 7, Indiana
OFFICES AND DISTRIBUTORS
IN ALL PRINCIPAL CITIES



For more facts, use Request Card at page 18 and circle No. 390

The importance of a well trained crew becomes increasingly apparent as the 100-foot-high water tank nears final stages. The lift of a top section of one of the outside legs is controlled by men with tag lines. ▶



The derrick, with load and boom cables controlled from the ground, eases a leg section into place. A man near the joint, barely visible at bottom of illustration, wears hard hat and safety belt hooked to a cable as he works from the horizontal struts. ▶



From this vantage point, the derrick could first build up the leg sections and connecting struts, then place the bottom sections of the shell in six lifts. Another six lifts put the top sections into place.

But the derrick would have been of little use if the men were not there, clinging to the steel, ready to shove a bolt or an erection pin into place. The legs and riser of a tank give a man little place to find a toe hold. To move around on the superstructure, the "sky jockeys" have to crawl on the narrow horizontal struts. But throughout the job, the men wore safety belts and hard hats. The only exception was one man, stationed safely in the center post. Whenever sections of the tank were being hoisted into place, all the men were off the superstructure. They remained on the ground until the lift was completed.

Riser built first

After Star Industries had completed the substructure work for the tank, CB & I crews started the superstructure by erecting sections of the 4-foot-diameter center riser. This was a tricky business, and the men handled the job without the use of a crane. The boom of the derrick was used as a gin pole as it "climbed up" the side of the riser. Actually the boom was held vertically by brackets against one of the 24-foot sections of the riser. Mounted in this position, the boom was able to lift the next higher section of the riser into place. A line was hooked to the top of the previously placed section to pull the boom to the next highest position on the riser.

After the riser had been built, the mast and boom were placed at the top of the riser to form the derrick. The lift and boom cables passed down through the hollow riser and then over to a two-drum hoist. The Clyde hoist, driven by a Wisconsin engine, was stationed about a hundred feet from the base of the tank. Each section of the riser was steadied by six guy wires which ran from the top of the riser to each of the leg pedestals.

With the derrick in place, the crew started to build up the legs and the connecting struts and rods. The 112-foot-long legs were delivered to the job in three sections. After the derrick

(Continued on next page)

For DEEP-DOWN Breathing...




**Depend on NAYLOR PIPE
for this Vital Ingredient
in Tunnel Construction**

There's nothing more precious than an uninterrupted supply of fresh air for underground operations. And there's no better way to get it there than through dependable, economical NAYLOR Spiralweld pipe.

Consider the advantages this distinctive pipe offers you. It's light in weight. Easier to handle and install—especially when you use the one-piece NAYLOR Wedgelock coupling to speed connections. Lines hug the wall — can be extended with only one side of the pipe in the open. And you can count on greater collapse strength and safety, because of its exclusive spiral-lockseam structure.

Anyway you look at it, you'll be time and money ahead to specify NAYLOR Pipe — not only for ventilating but also for other construction needs such as water lines, high air lines, dredging and other services.

Write for Bulletin No. 507.



NAYLOR

1270 East 92nd Street, Chicago 19, Illinois
Eastern U.S. and Foreign Sales Office
60 East 42nd Street, New York 17, N. Y.

**NAYLOR
PIPE
COMPANY**

For more facts, use Request Card at page 18 and circle No. 391



◀ This section, made of several plates, is held by cables at three points as the crew prepares to make the lift. A pulley allows a cable to be adjusted so that the section will hang in the exact position it takes in the tank.



◀ Crewmen rush into action as the plate is lifted far enough so that it can be swung around. Men with tag lines control the swing of the guy derrick boom.

FOR PAVEMENT BREAKING USE

THE ORIGINAL *Superkut* CHISEL BY 



DESIGN

PERFORMANCE

ECONOMY

ALSO SPECIFY



- Unique wedging action actually breaks concrete faster and easier.
- Power-matched for use with modern hammers.
- Self-sharpening - stays sharp 8 to 10 times longer.
- Exceeds conventional moil points by 10 to 1.
- Outperforms conventional wedge or spread points by 3 to 1.
- Breaks 50% more concrete per man hour than any other tool.
- Enable workmen to accomplish more work with less fatigue.
- Based on actual performance - SUPERKUT is your best investment for all-purpose use.

Don't be satisfied with imitations — specify the original Vulcan SUPERKUT and KNOW the difference.

VULCAN for:

- Pavement Breaking and Clay Digging Tools
- Drill Steels
- Chipping and Electric Hammer Tools
- Hand Tools for Concrete, Stone and Steel Workers

VULCAN TOOL MANUFACTURING COMPANY

41 LIBERTY STREET, QUINCY 69, MASSACHUSETTS

Specialists in the Design and Production of Pneumatic Tool Accessories

For more facts, use Request Card at page 18 and circle No. 392

VULCAN TOOLS are sold by distributors throughout the United States and Canada

Fast tool repairs for
***Black & Decker* tool owners**



Genuine
Black & Decker
PARTS & SERVICE
available near you

★ **Free Inspection**

★ **Standard B&D Guarantee**

Look Under "TOOLS-ELECTRIC" in "Yellow Pages"

Look in Yellow Pages under "Tools Electric" for address of nearest FACTORY SERVICE BRANCH

Or write direct for address of nearest branch to:



Black & Decker
QUALITY ELECTRIC TOOLS

FREE! USE and CARE HANDBOOKS are available for each B&D Tool. Specify tools you own. write: THE BLACK & DECKER MFG. CO., Dept. S3606, Towson 4, Md.

For more facts, circle No. 393

NOW! Drawings, Prints and Maps Easily Filed, Quickly Located!



PLAN HOLD Ends Trouble and Cost of Damaged or Lost Prints

PLAN HOLD holds plans, prints, maps, drawings, etc., up to 48" wide — and holds them better than any other method. Standard PLAN HOLD fits most racks now in use. Also available are PLAN HOLD wall racks, rolling stands, carousel units, cabinet units, etc. Order from your Blue Printer, Engineering or Office Supply Dealer, or write for Catalog No. 7.

PLAN HOLD CORPORATION

SOUTH GATE, CALIF.

For more facts, circle No. 394

(Continued from preceding page)

lifted the 2-ton sections into place, workmen bolted the butt ends at two points. Later, welders climbed the steel to make the permanent connections.

Assemble shell sections on ground

The six sections that made up the lower half of the shell were assembled on the ground from pre-cut plates of 5/16-inch mild steel. Each section consisted of four to five plates welded together, plus an outside catwalk section. The upper half of the shell, built of 1/4-inch steel, was also made up from six sections. Welding these plates together on the ground had to be done with a great deal of care, for the completed section had to fit into the shell with only 1/4 inch to spare. Using Lincoln and Hobart rods, the men butt-welded the pre-cut plates to make up the sections. On the job there was one portable Lincoln 400-amp welding machine driven by a GMC diesel; also three General Electric 400-amp welding machines powered by a Murphy diesel generating unit.

In another important part of the ground welding operation, crewmen placed temporary erection lugs and brackets on the inside of the shell section. The boltlike lugs were welded at intervals along the inside edges of the section. These were later used with key plates and erection pins to hold the section to an adjoining one. The welders also spotted in brackets to hold the work platform on the vertical side of the section.

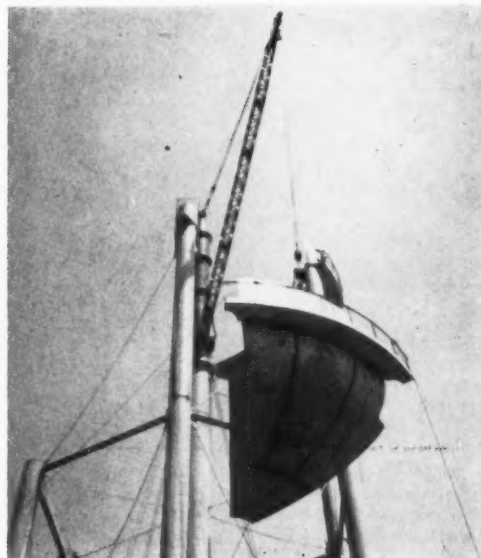
Lifting the sections

Lifting the big sections into place was a ticklish operation. It required perfect teamwork between the hoist operator on the ground and the signalman in the derrick crawler post. The signalman gave hand signals to the hoist operator who made delicate adjustments to the load and boom cables. The least bit of wind made it extremely difficult to place a section; in windy weather, erection stopped and the men stayed on the ground to make up the sections.

The lift of each 3,100-pound bottom section was made with a three-point suspension and a 5-part line. The

CONTRACTORS AND ENGINEERS

All welders are off the tower as the lift is made by the derrick. Load and boom cables pass through the center of the riser to a hoist on the ground, and a man on the center riser gives hand signals to the hoist operator. ▶



Vermilya-Brown to rebuild 700-year-old church

The New York City building firm of Vermilya-Brown Co. has contracted to reconstruct a 700-year-old church, recently acquired by the New York City Metropolitan Museum of Art as a loan from the Spanish government. The apse and church will be an addition to the Cloisters, a branch of the Metropolitan Museum.

Some 3,300 stone blocks, sculptures, capitals, and other elements of the Church of San Martin in Fuentiduena, Spain, were dismantled, crated, and shipped to New York. The contractor stored the cases at the Cloisters in reverse sequence—the building's top pieces on the ground, and bottom foundation courses on top of

the pile. The church, when completed in 1959, will stand 40 feet high, 30 feet wide, and will weigh about 300 tons.

Wigton-Abbott division moves to new offices

The Petrochemical, Process & Industrial Division of Wigton-Abbott Corp., engineers and constructors of Plainfield, N. J., have moved to new headquarters in the Raymond Commerce Bldg., 1180 Raymond Blvd., Newark, N. J.

The new offices occupy 11,000 square feet of floor space on the 26th floor of the building.

Henry C. Day, vice president and director of the firm, heads the division.

section was hung in the exact position it would take in the shell. The swing of the boom was controlled by tag lines from the ground. The load and boom lines were controlled by the hoist.

When the section had been set in place, the man on the shell, using key plates and erection pins, clamped it to the adjoining section. The seams joining the sections were later welded.

The six top sections were set in place and welded in a similar manner. One of the last steps in the construction was to dismantle the derrick and lower it through a space where a plate had been left out of the bottom section. After the erection crew had pulled stakes, a paint crew came in to put the finishing touches on the tank.

Personnel

Tom White kept the job moving along for Chicago Bridge & Iron. His assistant superintendent was William Peneston.

Supervising the operation for the Corps of Engineers was resident engineer G. A. Vulliamy, with John H. Wylie as full-time inspector. The district engineer for the Kansas City District is Col. Lawrence E. Laurion.

THE END

Massachusetts concrete group elects officers

William Moore has been elected president of the Massachusetts Ready-Mix Concrete Institute, Inc. Moore is associated with the J. P. O'Connell Co., Boston.

Also elected were John B. Donovan and Emile L. Dauphanais, vice presidents; and Dean M. Boylan, treasurer. Seven directors were chosen.

Florida pike cuts rates for vehicles at night

A night flight-express plan is now in effect on the Florida State Turnpike. Bargain rates apply to all vehicles—from passenger cars to the largest trucks—entering the superhighway from 10 p.m. to 6 a.m., even though their trips may not be concluded at that time. Tolls are cut up to 40 per cent.



This Model TD Rear Dump Euclid offers a 10-speed Fuller 10-F-1220 Transmission.



A 5-speed Fuller 5-F-1220 Transmission gives rugged dependability to this Euclid R-18 Rear Dump Truck.



This Euclid 5-12 Hydraulic Scraper is powered through a 5-speed Fuller 5-F-1220 Transmission.

Geared by FULLER...

For heavy-duty earthmoving and mining equipment, leading manufacturers standardize on Fuller Transmissions... for these good reasons:

Fuller Transmissions are designed and built for long, trouble-free service under the most severe operating conditions. These heavy-duty transmissions provide smoother shifting,

longer engine life and the right gear ratios for the job... all performance features that add up to faster work cycles and greater profits for Fuller Transmission users.

From more than 100 models available for rubber-tired equipment, you'll find a Fuller Transmission de-

signed to do your job better... and at lower-than-ever operating cost.



FULLER MANUFACTURING CO. Transmission Division • Kalamazoo, Mich.

Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla.
For more facts, use Request Card at page 18 and circle No. 395



School learnin' for equipment operators

**New courses are turning out competent
equipment operators in anticipation of the
Road Program's demand for manpower**

In Illinois, where Greer Technical Institute has its Heavy Equipment Operators Division near Braidwood, instructor John Rolando starts a week-long course on front-end loaders with a short classroom session.



Several years ago, a graduate with a Bachelor of Bulldozing degree would have been a hard man to find. Now, with several equipment operators' schools in session throughout the nation, a contractor may have his pick of the graduating class.

The schools, each of them doing a good job of training operators, are springing up all over the country. Operating in the Midwest since October of 1956 is the Heavy Equipment Operators Division of Greer Technical

Institute. It is located about 50 miles southwest of Chicago on U. S. 66 near Braidwood, Ill. Geared to meet the needs of the national road-building program, the school offers 4 to 8-week courses, and operators have classroom training and actual practice with equipment on a huge tract of land.

Another school recently formed to meet the demand for heavy equipment operators is the Western National School of Heavy Equipment

Operation, Inc., at Weiser, Idaho. This school offers four classes covering a period of 6 to 8 weeks.

Texas A. & M. has the distinction of being the first public institution of higher learning to operate a heavy equipment operators' school. Conducted by the Engineering Extension Service of the college, it operates near the campus. This is a 6-week course, with tuition costing \$350, and it gives trainees certificates as competent operators of the type of equipment they

specialized on during the course.

Practice at Greer

All the schools operate along similar lines. Anyone visiting the site of the Heavy Equipment Operators Division of Greer Technical Institute near Braidwood, Ill., will find some 700 acres of varied terrain being used by trainees working equipment. This land was formerly a strip mine, and is leased by the school for a dollar an acre per year from the Northern Illin-

Standard Steel MODEL 55 Tandem Roller

1 1/2 to 2 1/2
TONS

for **ECONOMY...**
SPEED



**BUILT LIKE
THE BIG ONES
PERFORMS LIKE
THE BIG ONES**

Provides FLUSH CURB Rolling on Each Side

THE MODEL 55 ROLLER was designed to provide two important advantages: (1) Adequate compaction for patch rolling requirements and (2) Ideal roll dimensions for smoothing and finishing work. Ballasting is evenly distributed through the use of both steel and water ballast. Steel ballast is removable in 70# sections providing a wide choice of compaction ranges.

The Model 55 will roll to within 2 inches of wall or building on driver's side and to 4 1/2 inches on opposite side. Eight inch ground clearance provides flush rolling adjacent to curbs. Automotive steering makes easy driving. Up-hoisted seat, safety seat rail, speed control, throttle and foot brake are of motor-car type — and water valve is in easy reach of operator. The maximum weight with all ballast is 4600#. Shipping weight is 3600#. Speed — from 1.75 MPH to 3.5 MPH.



TRAILERIZED FOR EASY TRAVEL FROM JOB TO JOB

Photo above shows ease with which roller is loaded and unloaded from trailer. One man can easily lift and hook it to towing vehicle.

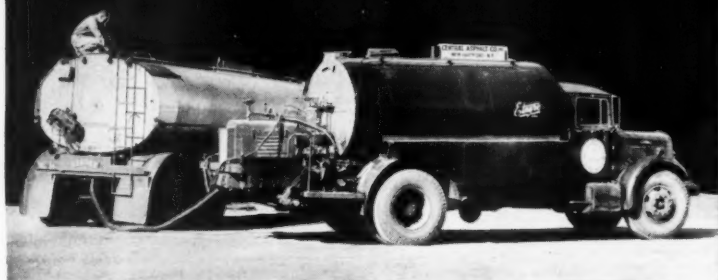
Loading Ramp becomes end gate. Roller locks on trailer for safe travel at all speeds. Write for FREE Catalog and Prices.



Standard Steel Works, Inc. NORTH KANSAS CITY, MO

For more facts, use Request Card at page 18 and circle No. 396

"Our Etnyre 'Black-Toppers' and Hauling Tanks keep us sold"



Two of 22 Etnyre units operated by Central Asphalt Inc., New Hartford, New York. A 1250 FX 400 Style D "Black-Topper" is shown loading 350-degree bituminous material from an Etnyre Hauling Tank equipped with low-pressure burners.

Recently adding two new Etnyre "Black-Topper" Distributors and a new Etnyre Hauling Tank to bring their fleet up to 16 distributors and 6 transports, Central Asphalt Inc. says, "The fine performance and dependability of the units we are operating keep us sold on Etnyre equipment."

Central Asphalt has used Etnyre "Black-Topper" Distributors and Load-Topper Hauling Tanks extensively in the application of all types of bituminous materials throughout their 11 years of successful operation in central, southern, and southwestern New York State.

Etnyre tanks are originally and exclusively designed and made for handling "heavy" materials. Over and over again, the superiority of these tanks in the special service for which they are designed has been proved by substantial users like Central Asphalt. Learn the details *before* you buy another unit! Call your Etnyre dealer or write E. D. Etnyre & Co., Oregon, Illinois, U.S.A.

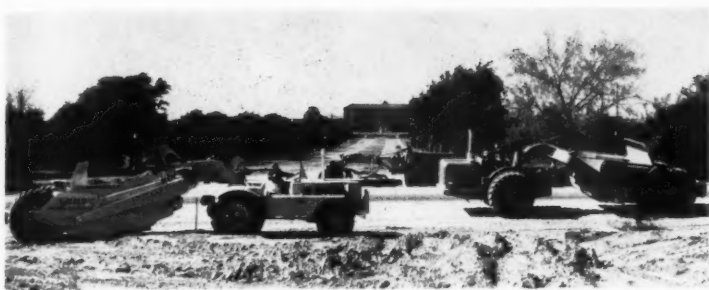
SEE YOUR ETNYRE DEALER

ETNYRE
"Black-Topper"
BITUMINOUS DISTRIBUTORS



For more facts, use Request Card at page 18 and circle No. 397

CONTRACTORS AND ENGINEERS



And in Texas, the instructors for classes held by the Engineering Extension Service of Texas A. & M. put equipment through a preliminary trial run. The school opened in November.



In Idaho, an instructor at the Western National School of Heavy Equipment Operation at Weiser checks out a student on an Austin-Western Super 99 6-wheel drive and steer tandem power grader.

ois Coal Co. The huge piles of materials left over from the stripping operation make an excellent practice ground for the eager operators. Adequate classroom and maintenance facilities for the school were provided by converting several coal company buildings on the site.

Equipment

The school allows the trainees to practice with some 20 pieces of earth-moving equipment valued at about

half a million dollars. The new equipment has been lent to the school by manufacturers. International Harvester Co. supplies a large share of the equipment. All the crawler tractors, including two big TD-24's, are International. Also on loan from the company is a Model 65 Payhauler and two Model 55 Payscrapers. The Frank G. Hough Co., a subsidiary of I-H, is represented with its Model 12 and HO Payloaders.

(Continued on next page)



**On BIG jobs or
SMALL jobs:**

**Save wire . . . save time . . . increase
production with IDEAL Tie Wire Reels!**

For re-bars, metal lath, pipe insulation—wherever wire is applied and tied—Ideal Tie Wire Reels permit 6 to 8 more ties per man per minute . . . save 25 to 30% in wire . . . compared to dangerous coil-over-shoulder method! Ideal Tie Wire Reels refill in seconds . . . handle 14

Dealer inquiries invited . . . write, wire or 'phone us today!



IDEAL REEL COMPANY, PADUCAH, KENTUCKY

For more facts, use coupon, or Request Card at page 18 and circle No. 398

through 20 gauge wire . . . end wire waste and speed production on every job! Ask your equipment distributor for the full story and a free demonstration.

**Special Trial Offer!
Money-Back Guarantee!**

Rush me postpaid one Ideal Tie Wire Reel complete with wire filler. \$11.95 check enclosed ☐ Bill me ☐ I understand this is your special, one-time-only introductory price, and I may return the unit within 30 days, if not completely satisfied, for full refund.

Name _____
Company _____
City _____ Zone _____ State _____



Smith-Field Automatic Curb and Gutter Machine in operation.

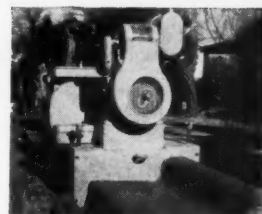
at LESS COST
NO HAND FINISHING!
NO FORMS!

Lay up to 1,200 feet of integral curb and gutter per day — with no forms or hand finishing. The Smith-Field Automatic Curb and Gutter Machine is doing just that for cities, contractors, builders over the world. Savings of time, labor and material mean money on any job anywhere. The Companion machine — Stephens-Canfield Automatic Curber — lays curbing with the same dispatch, reaching as high as 3,000 feet per day.

The Smith-Field Automatic Curb and Gutter Machine uses Portland Cement Concrete. The Stephens-Canfield Automatic Curbers work equally well with either cement or asphalt mix.



**LEARN about the savings — the
efficiency of these machines.
Write for full details and prices.**



Smith-Field Automatic Curb and Gutter Machine — Model Mark 3



Stephens-Canfield Automatic Offset Curber — Model 56W



Stephens-Canfield Automatic Curber — Model 55A



SOLE MANUFACTURERS AND DISTRIBUTORS—U.S.A. AND FOREIGN
PATENT NOS. 2,707,422, 2,818,790—AND OTHER PATENTS PENDING

For more facts, use Request Card at page 18 and circle No. 399



◀ After the classroom session at Greer which covered such subjects as safety, maintenance, and general operation, Rolando shows his 9-man class how to operate the Drott Skid-Shovel from the International TD-14.



Instructor Bill Ray starts Greer's week-long course in dozers, using models of equipment in a sandbox to illustrate the points he wants to get across to his students in the class. ▶

Much of the first week is spent inside by the students, learning about the equipment and its proper care. Safety regulations for construction work are stressed. Using a working cutaway model of an International TD-14 diesel engine, the men study construction of engines. Movies and strip films show the correct operation and maintenance procedures for various types of earthmovers. The men also study operator's manuals for the equipment they will soon be using.

The future operators learn how to read grade stakes and how to set them. They learn basic transit and level work, and later actually set the stakes for some of their grading work. Greer graduates operators with a

(Continued from preceding page)

The Gallion Iron Works has also contributed to the success of the school by lending two motor graders—a Model T600 and a Model 118. The crane operators' class would be out of business without its P&H 255A.

What is taught

Managed by Keith Hutchison, the school runs on a year-round basis. About 50 men attend the regular weekday course, and almost as many find it convenient to take the course on Saturdays and Sundays.

There are five separate courses, ranging in length from 4 to 8 weeks and in tuition from \$225 to \$780. There is a 5-week course in the operation and maintenance of trucks, front-end loaders, crawler tractors, and scrapers, and a 4-week course for operators of motor graders. An 8-week course is a combination of the first two. There is also a 4-week course for crane operators.

Started only last October is a separate school for construction machinery mechanics. The course is designed to train men in engine maintenance, welding, and the repair of all types of equipment.

5-week course popular

One of the most popular courses is the 5-week course on the maintenance and operation of trucks, front-end loaders, dozers, and scrapers. Each instruction group is limited to about nine men. They keep going 8 hours a day, 5 days a week. The accent is placed on the actual handling of the equipment. About 90 per cent of the time is spent in the field and the remaining 10 per cent in the classroom.



The next step is to let trainees operate the equipment themselves. One of the Greer students does just that as he practices loading the bucket of a Hough Model HO Payloader.



INTERNATIONAL model RDF-230-H six-wheeler. Gross vehicle weight 60,000 lbs. Gross combination weight 90,000 lbs. High-torque HR-6 Cummins 175 hp. diesel engine; other diesel options to 250 hp. Extra-heavy-duty front end. True geometric power steering. Heat treated alloy double channel frames. One of many six-wheelers and all-wheel drive models from the world's most complete truck line.

Need 'em rugged?

INTERNATIONAL Trucks are ready for anything—built to handle the big loads with ease. They're specialized on the manufacturing line to keep off-highway operations on the move.

Extra-heavy components shrug off brutal load punishment. Low-cost diesel power pulls through the heaviest going with profit-making fuel economy. What's more, these heavy-duty diesels are backed up by a power train that matches engine, truck, load weights and job exactly.

The result: You put more money in the bank because you haul extra-weight loads with less on-the-job cost and work-stopping downtime.

Your drivers will like them and you'll like them. See your INTERNATIONAL Dealer now. He's ready to help you choose the right truck for your job... the truck that costs *least* to own!*

*Signed statements in our files, from fleet operators throughout the U.S., back up this statement.

INTERNATIONAL TRUCKS

CONTRACTORS AND ENGINEERS

healthy respect for grade stakes.

Sixteen hours of the first week are spent exclusively on equipment care and preventive maintenance. Hydraulic and cable controls are studied. Maintenance check forms and lubrication charts are put into actual use. The students check and lubricate all equipment before it goes out into the field each morning.

After the first week, a trainee is ready to try his hand at operating a big piece of equipment. Since many of the trainees have never operated anything larger than a pickup, the second week of the program breaks him in on driving International 4 and 9-yard dump trucks. Of course, he soon works up to the big 17-yard end-

dump—an International Model 65 Payhauler. The steep slopes of the mine dumps give a trainee plenty of chances to practice shifting gears while going up and down hill.

The standard procedure for teaching the students how to operate the big equipment is to tell them, show them, and then let them try it themselves. The men spend the greatest part of their time taking turns on the three or four pieces of equipment. The instructor circulates within the group, occasionally riding alongside a trainee on a rig. Students spend one week on each type of equipment.

After working the dump trucks for a week, a student goes on to front-end loaders. He works out on both



Greer's Bill Ray shows a student how the Drott 4-in-1 mounted on an International TD-9 can be used as a bulldozer. All the new equipment used at Greer has been lent by manufacturers.



Conventional trucks: INTERNATIONAL model A-182 with four-yard dump body, 141-in. w.b., 308 cu. in. engine, 16,000 lbs. two-speed rear axle, heavy-duty springs, double oversize brakes, 9.00 x 20 10-ply tires, 21,000 lbs. GVW.

INTERNATIONAL model A-164 with four-yard dump body, 129-in. w.b., 264 cu. in. engine, 15,000 lbs. two-speed rear axle, heavy-duty springs, oversize brakes, 8.25 x 20 10-ply tires, 19,000 lbs. GVW.



Cab-forward trucks: INTERNATIONAL model ACF-182 with eight-yard dump body, 149-in. w.b., 308 cu. in. engine, 28,000 lbs. tandem drive rear axle, oversize standard brakes, 9.00 x 20 10-ply tires, 33,000 lbs. GVW.

INTERNATIONAL model AC-1892 with five-yard dump body, 137-in. w.b., 308 cu. in. engine, five-speed, constant-mesh transmission, 18,500 lbs. two-speed rear axle, oversize brakes, 10.00 x 20 10-ply tires, 25,500 lbs. GVW.

crawler and rubber-tire models. He also gets a chance to learn the four operations of the versatile Drott 4-in-1 bucket.

The fourth week is devoted to the various operations of crawler tractors—bulldozing, sloping, scraper push-loading, and stripping. In the fifth and final week of the course, the trainee climbs up on the seat of a big International Model 55 Payscraper. He practices not only cutting and filling, but also sloping and pioneering a sidehill cut.

While training, the students have the satisfaction of working on an actual construction project. They dig basements, build parks, and construct air strips, all of which are later ripped up so that they can be built again by another class. Much of the dirt moved at the school goes into building a 3,400-foot airstrip. The landing strip, which is also staked out by the students, will eventually accommodate private planes.

The seven instructors of the school have been recruited from the construction field. Although each is a specialist on one type of equipment, all of them know the operation of the other equipment at the school. Before becoming a member of the staff, each instructor is given a 5-week teacher-training course.

Students from other countries are scattered through the courses. In one particular session there was a trainee from Canada, one from Brazil, and another from Guam. The men are generally young and have had no ex-



An International Model 55 Payscraper hauls fill from a mine dump to a 3,400-foot airstrip being built at Greer by the trainees. Instructor John Dixon rides the fender as he offers helpful suggestions to the operator.

? Need 'em now?

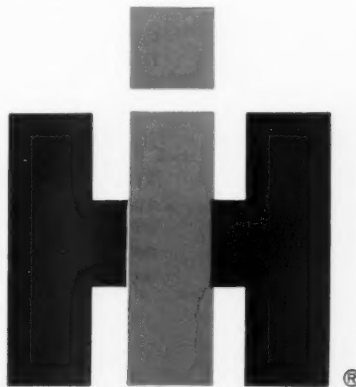
Four Heavy-Duty models are ready now for immediate delivery! Call your INTERNATIONAL Dealer—for delivery from the INTERNATIONAL Truck Factory Inventory Pool.

Choose from conventional or cab-forward models complete with bodies, hoists, frame reinforcements, tow hooks, front directional signals, rear view mirrors both sides, heater-defrosters and oil filter.

To meet your specific requirements you can have any or all the following optional equipment installed in a matter of hours: cab protectors, extension sides, swinging partitions and spreader aprons.

Keep your job moving on schedule with INTERNATIONAL Trucks—first in six-wheel and heavy-duty truck sales for over 23 years.

cost least to own!



INTERNATIONAL HARVESTER COMPANY, CHICAGO
Motor Trucks • Crawler Tractors
Construction Equipment • McCormick®
Farm Equipment and Farmall® Tractors

For more facts, use Request Card at page 18 and circle No. 400



Field instruction gets heavy emphasis at the school run by the Texas A. & M. college system. This is true of all the other schools. The school has more than half a million dollars' worth of equipment for students to use.



A Greer trainee gets the feel of the Model P&H 255A crane controls under the eye of instructor Gordon Flint. The maintenance and operation of cranes is a separate 4-week course.



with CYANAMID at your service ...

**GOOD WILL
SPEAKS
LOUDER
THAN WORDS!**

Every construction project has the problem of getting—and keeping the good will of the community. To help you accomplish this, Cyanamid offers you:

Quality Explosives and Technical Assistance . . . so that you achieve maximum blasting efficiency, yet reduce noise, shock and vibration to the minimum.

"Good Will" Techniques . . . that will help prepare the community psychologically before you blast.

These quality materials and services are at the beck and call of every Cyanamid customer. Our plants and magazines are conveniently located for rapid delivery right to your operation. For more information, see your nearest Cyanamid representative, or write to

CYANAMID

AMERICAN CYANAMID COMPANY
Explosives and Mining Chemicals Department
30 Rockefeller Plaza, New York 20, New York

DISTRICT SALES OFFICES: St. Louis, Missouri • New York City, New York • Latrobe, Pennsylvania • Pottsville, Pennsylvania • Scranton, Pennsylvania
Dallas, Texas • Salt Lake City, Utah • Bluefield, West Virginia. **THE CYANAMID LINE:** High Explosives • Permissibles • Seismograph Explosives
Blasting Agents • Blasting Powder • Blasting Caps • Electric Blasting Caps • Blasting Accessories

For more facts, use Request Card at page 18 and circle No. 401

(Continued from preceding page)

perience in operating heavy equipment. A few are sponsored by contractors, but most of them pay their own way. So far, there have been no complaints about their ability to get and hold jobs in the construction industry.

Idaho School

The Western National School of Heavy Equipment Operation, Inc., at Weiser, Idaho, offers four classes covering a period of 6 to 8 weeks. There is a course in the maintenance and operation of motor graders. In this training, Austin-Western Super 99 graders are used. Another course teaches the maintenance and operation of crawler tractors and scrapers. A third covers the operation of the power shovel, crane, dragline, and backhoe. A special course on the maintenance and overhaul of diesel engines is also given.

The Western school is equipped with over \$200,000 worth of heavy equipment. Classroom time is held to a minimum to allow maximum time for actual work on the equipment in the field.

There are no special educational requirements for admission to these courses. Each applicant, however, must be of good character and agree to abide by the rules of the school.



Keith M. Hutchison, manager of the Heavy Equipment Operators Division of Greer Technical Institute.

CONTRACTORS AND ENGINEERS



A morning check and a greasing for a Drott 4-in-1 bucket of an International TD-9 tractor starts the morning for one of the Greer trainees. This is a daily routine for all equipment going into the field.

The school carries on its field work, regardless of weather, under the same conditions that would prevail in actual practice. The tuition ranges from \$400 to \$600, depending on the course selected.

Texas school has tough job

The Texas A. & M. school, the answer to a need that has been felt for a long time, was several years in the planning stage. In fact, there were times when it seemed as if the school would never come into being, but the Engineering Extension Service officials refused to abandon the idea.

It had its beginnings with the Texas Heavy-Highway Branch of the Associated General Contractors of America. At the request of AGC, the Engineering Extension Service of the college sent a man to North Carolina to observe what was then the only recognized commercial school in the country for heavy equipment operators. He was also to find out if a similar school could be set up in Texas. At the same time, operations of other related schools and factory service agencies were checked throughout the country.

The long-range planning and numerous conferences began to pay off after a meeting of Texas equipment distributors and factory representatives was called at Texas A. & M. At the meeting, equipment needs were outlined and discussed. Some distributors were immediately enthusiastic about the school; others were equally sure the idea was worthless. But as earthmoving equipment began to pour in and the first classes were set up, the project gained favor. By the time the first classes were started last November, the project had the complete support of all principal heavy equipment manufacturers, distributors, contractors, and a number of associations with an interest in heavy construction.

The first of a series of 6-week schools began on November 11, 1957. Some of the students were young men who had to reach down into their own pockets for the \$350 tuition fee. Others were sent to the school by contractors who do not need a pencil to figure out that well trained operators are a sound investment.

Classroom time is held to a bare minimum; the balance of the course is spent in learning to operate earthmoving equipment in an undeveloped

area near the campus.

Students are able to train on some 22 pieces of equipment, including tractors, tractor-dozers, scrapers, and loaders. All operations are critically supervised by instructors, all of them recruited directly from the construction industry. Among them are Alvin W. Jones, chief instructor; Charles W. Brannan, motor-scraper specialist; and Raymond E. Blevins, blade specialist. Coordination of the program is in the hands of A. L. Kramer.

Instructors offer their help when they feel it is needed; otherwise, they leave the students alone to work out solutions to problems.

All students in that first class now have certificates showing that they are capable operators of a special type of equipment.

A new idea


Schools for equipment operators were unheard of some years ago. Today's development is only the outgrowth of a practical need. Contractors cannot risk having careless operators render a rig unproductive.


Though the schools do not claim to produce finished operators, the training does allow a man to step onto a piece of equipment and make it work for him. Some of the graduates go directly to jobs as equipment operators. Others break in for a short time as oilers.

But no matter how they get their start, the graduates are young, ambitious, and generally ready to start out on most types of earthmoving equipment and on almost any type of job.

THE END

FOR HAY







Accurate, Dependable Steering Requires MECHANICS Precision

Row crop tractor manufacturers rely on **MECHANICS Roller Bearing UNIVERSAL JOINTS** for accurate, dependable steering—free from backlash. Stamped yoke, projection welded types make possible economical installation. Compact types fit snugly into cramped space and into strings of three joints—

CORN - OR COTTON

between the steering wheel and gear box. Let **MECHANICS** engineers help design efficient steering strings for your products.

**MECHANICS
UNIVERSAL JOINT
DIVISION**
Borg-Warner
2030 Harrison Ave.
Rockford, Ill.

Export Sales Borg-Warner International
36 So. Wabash, Chicago 3, Ill.

MECHANICS

Roller Bearing

UNIVERSAL JOINTS

For Cars • Trucks • Tractors • Farm Implements • Road Machinery •
Aircraft • Tanks • Busses and Industrial Equipment

For more facts, use Request Card at page 18 and circle No. 402



Energy and ingenuity: The Ferris formula



A world-wide contracting business tends to tie a man down to a desk, but George Ferris tries to spend at least half of his time visiting projects and conferring with clients throughout the world.

Field-tested contractor now heads international Raymond organization

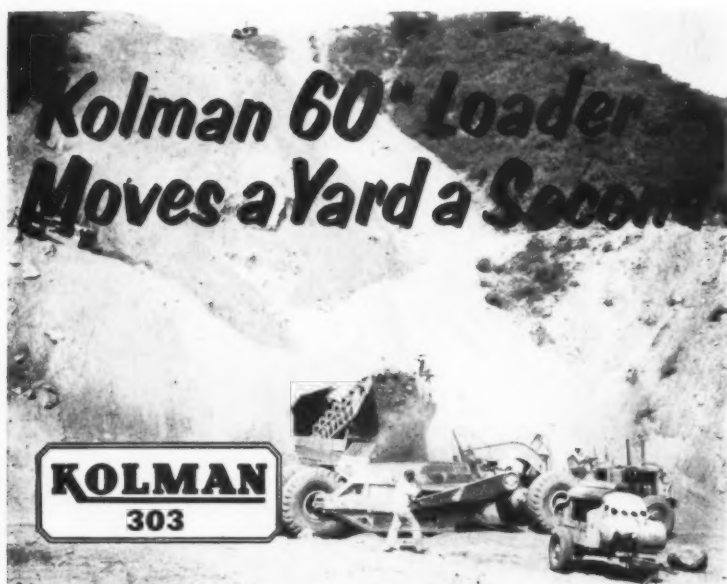
"Energetic . . . flexible . . . an unholy ingenuity in bypassing obstacles . . . a positive genius for improvisation in emergency."

The above description occurs in a book, "Builders for Battle", which tells the dramatic story of how the Pacific naval air bases were built prior to and during the early years of World War II. It characterizes George F. Ferris, the man who directed this \$350 million headache.

Today, as president of Raymond International Inc.—formerly Ray-

mond Concrete Pile Co.—Ferris looks back on the Pacific project as having given him the best possible field experience. For that enormous job was beset by almost every conceivable obstacle, including many that he will probably never encounter again, at least in peacetime.

And there are obstacles aplenty—calling for imagination, ingenuity, and improvisation—to be met when a firm engages in heavy contracting of all types throughout the world, to say nothing of highly specialized



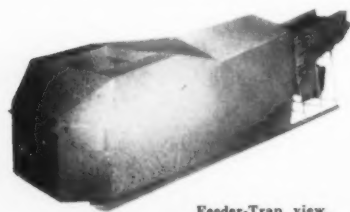
6,500,000 Yard Job in Beverly Hills Development Moves at Record Pace with KOLMAN 303 Conveyor-Loader

Cutting down high ridges and filling in canyons to construct homesites in an exclusive movie colony residential district in Beverly Hills involved moving 6,500,000 yards of rocky decomposed granite for J. A. Thompson Company, Los Angeles. The job was started with a fleet of scrapers which had to travel a mile over steep grades. The Kolman Model 303 belt loader 60" wide and 50' long was installed at the base of the high ridges. Dozers pushed material downhill to the feeder-trap, 29 feet in length, which allowed a huge live surge pile

at the feed end of the unit.

Rubber tired scrapers having a capacity of over 20 yards were loaded in 17 to 18 seconds. The Kolman 303 eliminated 75% of the scrapers and tractors called for in the original estimate. The Thompson Company figures it saved the cost of the loader on scraper tires alone!

The KOLMAN 303 Belt Loader is available with wheels and tires or as a skid-mounted unit. Extra heavy duty construction throughout delivers top performance under even the most severe loads.



Feeder-Trap view.

SEND for FREE literature

KOLMAN Manufacturing Co.

4922 West 12th St. Sioux Falls, S. D.

Please send free literature on—

- ☐ Model 101 Heavy Duty Conveyor
☐ Model 202 Junior Conveyor
☐ Vibrating Screen ☐ Feeders ☐ Traps

Quote . . . size or . . . capacity

Name

Address

City

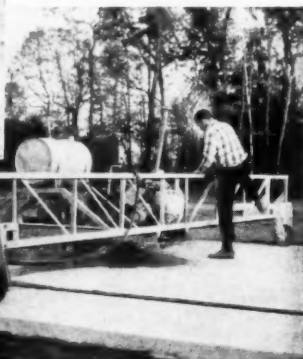
For more facts, use coupon, or Request Card at page 18 and circle No. 403

Increase your cutting footage per day...

with the **full-time POWER** of
WISCONSIN-powered
saws



Built by
Champion Mfg. Co.
St. Louis, Mo.



Special saw rig
developed by Concrete
Contracting Services,
Racine, Wisconsin

• Operator-hours become profitable work-hours only when the concrete saw delivers unfailing dependability whether patching, sawing trenches or contraction joints. Which is why Wisconsin Engines get the power nod on the great majority of concrete saws.

Engineers designing and building these engines anticipated the roughest, toughest conditions. Then built engines that would stand up to them . . . Wisconsin Engines. Tapered roller bearings at both ends of the crankshaft were included . . . so were superior lubrication systems along with an easily-serviced OUTSIDE magneto. In addition, each engine is designed to deliver an abundance of load-holding lugging power . . . to carry through the toughest sawing tasks.

The result is full-time power delivery for all Wisconsin Engines, 3 to 56 hp. Electric starting available on all models.

Write for Bulletin S-223, describing all models.



WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

For more facts, use Request Card at page 18 and circle No. 404

CONTRACTORS AND ENGINEERS

Scrapers place fill for a new road Raymond is building through a Thailand jungle. Native labor is being used in all phases—including equipment operation—of this 300-mile project.



by WILLIAM T. DARDEN

assistant editor

subcontracting in this country.

The Raymond organization is best known in this country for its concrete-pile foundation work, soil investigations, and some specialized heavy construction. But for years it has also operated as a major heavy contractor overseas, building bridges, dams, highways, and other installations. Both these domestic and foreign activities, with their particular problems, make special demands on the company and the men who direct its operations.

That Ferris has the stuff to meet these demands is perhaps best illustrated by the fact that in the four years he has headed the Raymond company, its net earnings have more than doubled. Last year saw a record total of \$5,348,000, and the firm began this year with a contract backlog of \$114,226,000—only 5 per cent below that on hand at the beginning of the previous year.

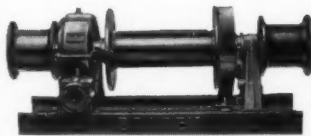
Contractors generally fall into two categories: those who have come up

(Continued on next page)

BRADEN BEST FOR ANY HANDLING JOB WINCHES

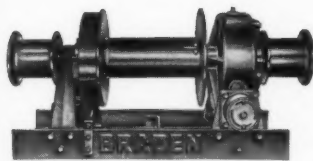
It is true that the fundamental mechanical details of practically every truck winch are similar. As a truck winch has comparatively few working parts it is much less complicated to operate and maintain than more complex machines.

BRADEN engineers, working with basic winch designs, have made improvement during the past 30 years that were unheard of a few years ago. Increased capacities, better materials, and features like the Oil Cooled Safety Brake, have made modern BRADEN winches tops in their field.



MS9-18B

One of the most versatile of the BRADEN line. Dependable and durable . . . with a rated capacity of 20,000 pounds.



MS18-18B

An extra strong winch with a rated capacity of 45,000 pounds. A tough baby for tough handling jobs.

Write for Catalog

BRADEN WINCH COMPANY
P.O. Box 547, Broken Arrow, Oklahoma



In service around the world

For more facts, use Request Card at page 18 and circle No. 405

JUNE, 1958



YOUR SEALTIGHT DISTRIBUTOR

yes sir . . .
we can
fill your
order
immediately!

men of the highway construction industry know they can depend on . . .

ONE DEPENDABLE SOURCE FOR...

SEALTIGHT®

PRODUCTS FOR BETTER CONSTRUCTION

- Expansion Joints; Premoulded Asphalt, Fibre, Corkfill, Sponge Rubber, Plain Cork and Self-Expanding Cork Types.
- Tongue and Groove Center-strip.
- Dummy Joints.
- Hot and Cold Pour Rubber-Asphalt Seal.
- Hot and Cold Pour Jet-Fuel Resistant (JFR) Joint Seal.
- Concrete curing compounds (clear and white Pigmented types)
- Air Entraining Agent.
- "PREMOULDED MEMBRANE" Vapor Seals
- "HYDROMAT" Asphalt Liners
- "DURAJOINT" Waterstops.
- Plus many other paving and building products.

W. R. Meadows Inc., the leading manufacturer of asphaltic products for over 30 years, and their distributors and dealers, located just about everywhere, offer you a complete line of top-quality, in-stock paving and building products. Order from one dependable source . . . you will save time, handling, and money. Eliminate the necessity of stocking lesser-used items . . . buy only what you need. Enjoy big savings by ordering mixed carload lots. For prompt service and expert engineering assistance you can rely on W. R. Meadows and their line of top-quality SEALTIGHT Products. Send coupon today for complete information and the name of your local SEALTIGHT distributor.

Write today for complete information.

PRODUCTS FOR BETTER CONSTRUCTION
SEALTIGHT®
W. R. MEADOWS, INC.

13 KIMBALL STREET
ELGIN • ILLINOIS

For more facts, use coupon, or Request Card at page 18 and circle No. 406

W. R. Meadows, Inc.
13 Kimball St., Elgin, Illinois

Gentlemen:

☐ Send my copy of your Sealtight Paving Products Catalog.

☐ Have representative call.

NAME _____ TITLE _____

FIRM _____

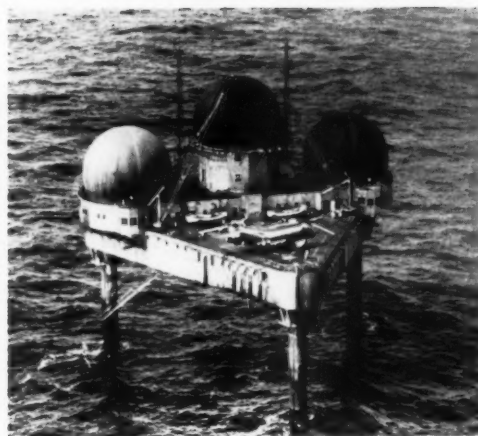
ADDRESS _____

CITY _____ STATE _____

117



A Raymond rig drives piles for a bridge on the Garden State Parkway in New Jersey. The company may have as many as 30 of these foundation jobs going on at one time in this country. The driving rigs and hammers are Raymond-built.



Construction on the "Texas Tower" was an exciting operation; stormy seas sometimes kicked up waves high enough to slap the bottom of the platform deck.

through the field and those whose background is in business and finance. Both can be highly successful at directing big construction firms.

The president of Raymond International is first and foremost a field man, and the biggest single frustration in his present position is that he cannot get to the field more often and personally oversee operations. Only a former super knows what this frustration can be.

Ferris had his eye on construction from the beginning. After high school in Jacksonville, Fla., where he was born in 1902, he began studies for a civil engineering degree at the University of Florida. Summers he worked as a lineman's helper on a transmission line and as an instrument man for a City of Jacksonville survey crew. He went to work for a West Palm Beach engineering firm after taking his degree, and for several years was chief engineer on a number of construction projects.

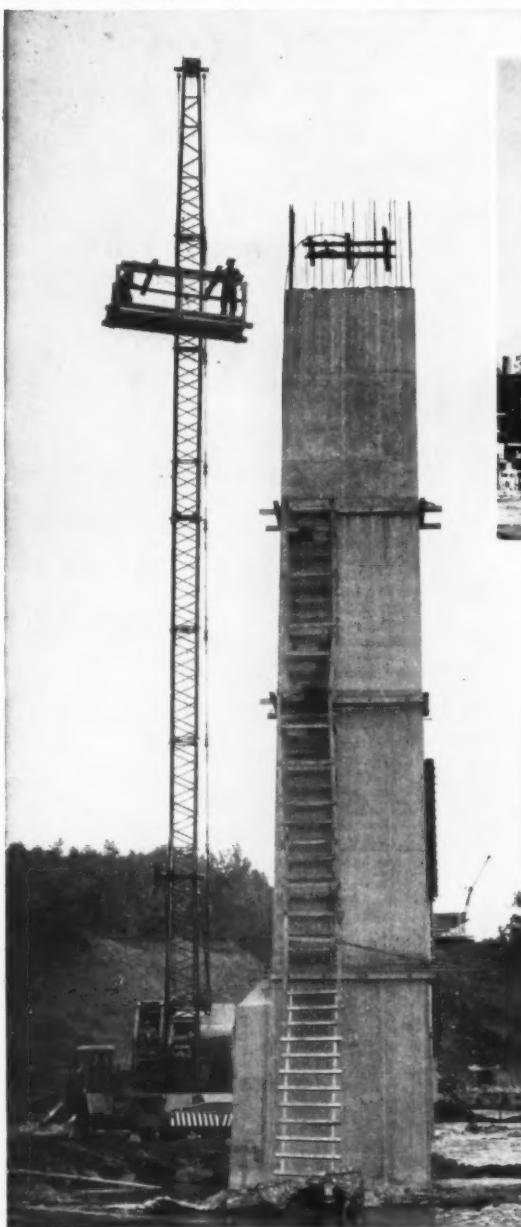
In 1928 young George got a taste of contracting on his own. He worked for himself as a private engineer, and started a small contracting business. He built a sea wall and a swimming pool, but before a year was out he realized the handicaps of being inexperienced and decided he needed further apprenticeship with an established company. So he went to work as a field engineer for Turner Construction Co., New York, N. Y.

For 10 years George worked in the field for Turner, mostly in a supervisory capacity. He directed such projects as the Mississippi River lock at Alton, Ill., and a number of buildings in the metropolitan New York area and elsewhere.

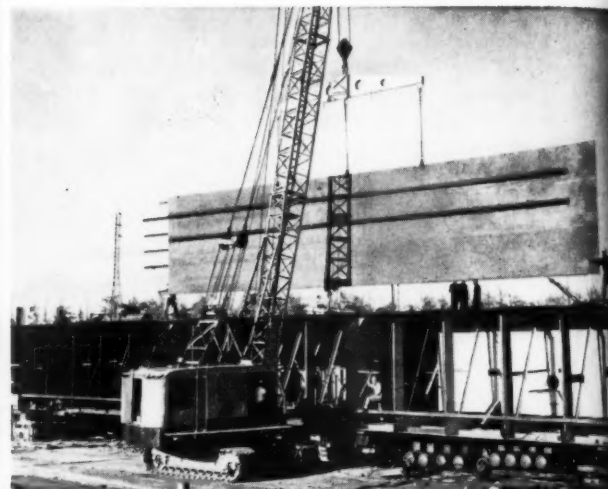
In 1939, the Navy awarded contracts for a string of airfields and other installations on South Pacific islands to a joint venture of several large contracting firms, including Turner and Raymond. Each participating company named one of its top engineers to a central operating committee. Turner sent Ferris, and he was named chairman of the committee and general manager of the over-all project.

In his book, "Builders for Battle", David Woodbury has this to say about the qualities George Ferris brought to the management of this

KOEHRING WORK CAPACITY in action...



A long way up — Building reinforced concrete piers for highway bridge, men and materials are hoisted to the top by a Koehring 305 truck crane, equipped with 90-foot boom. But that's not the limit of its reach. Truck-mounted 305 raises up to 100 feet of main boom, or 130-foot boom and jib with low A-frame! Butt-connected boom is safe, solid. Inserts are easily changed, only 2 bolts per corner. Check its lift capacities in chart.



Barge-builder — Large-section steel sideplates have to be hoisted and spotted in position for barge construction at this ship yard (above). It's an easy lift for the Koehring 605 crane. It has the power, strength and stability to safely lift up to 36 tons (on 50-foot boom). When extra reach is needed, the big 605 handles up to 110 feet of main boom — or 130-foot boom and jib.

Here are some figures that will interest you:

KOEHRING MODEL	SIZE DIPPER	LIFT CAPACITIES	
		(Crawler ratings based on 75% of tipping load. Rubber-tired machines — 85% of tipping load.)	
205 CRAWLER	½-Yd.	20,000 lbs.	at 10-ft. radius
205 ON RUBBER	½-Yd.	30,000 lbs.	at 12-ft. radius
305 CRAWLER	¾-Yd.	30,000 lbs.	at 12-ft. radius
305 ON RUBBER	¾-Yd.	50,000 lbs.	at 10-ft. radius
405 CRAWLER	1-Yd.	40,000 lbs.	at 12-ft. radius
445 ON RUBBER	(Crane only)	90,000 lbs.	at 15 ft. radius
605 CRAWLER	1½-Yds.	72,300 lbs.	at 12-ft. radius
805 CRAWLER	2-Yds.	104,200 lbs.	at 12-ft. radius
1205 CRAWLER	3-Yds.	190,000 lbs.	at 12-ft. radius

Want more information?



See Koehring distributor

EXCAVATORS • CRANES • DUMPERS • PAVERS • FINISHERS • CONSTRUCTION MIXERS • MUD-JACKING

vast and complicated undertaking:

"George Ferris was one of Turner's most valuable younger men. He was a master at getting things done in the field, as well as a good solid engineer. George's specialty was red-tape cutting, which he did with a fine glint in his Scotch eye and an unholy ingenuity in bypassing obstacles. George could have talked Carry Nation into setting up a round of drinks."

Every kind of problem

George Ferris encountered every possible obstacle during those South Pacific years. There was, first of all, the ever-present race against the impending war. If supplies weren't arriving on schedule, military red tape was holding up some phase of a

project. If the crews weren't getting restless—and in some cases cracking up—from the long, lonely months on desert islands, the Japanese were threatening momentarily to invade. It was always something.

There was tragedy, too, for when Japanese forces finally did invade the islands, some of the civilian construction workers lost their lives or were captured along with military personnel.

Still, the work was done, well and on time. And for his contribution George was presented with the Distinguished Public Service Award, the Navy's highest civilian honor.

In 1945, Ferris was elected a vice president and director of Turner. One year later he left Turner for the Raymond organization because, he

"Once a super. . ."
Here Ferris dons field gear and prepares to board the "Texas Tower" radar platform constructed by Raymond off the New England coast. He found this the "most fascinating" job he has ever seen.



15-mile sewer line — Installing a 12-in. sewer system for new housing area, contractor averaged 1,000 feet of line per day. Koehring 1-yard hoe did the trenching. Big-capacity 405 reaches a long way down — 22½ feet deep, to be exact! Long reach puts spoil bank well beyond edge of trench. Max. cutting width — 43 inches



KOEHRING DIVISION OF KOEHRING COMPANY, Milwaukee 16, Wis.

For more facts, use Request Card at page 18 and circle No. 407

says, he is basically a heavy-construction man and saw more opportunity at Raymond.

Opportunity there was, too. George joined the Raymond firm as vice president-director and general manager, and in 1953 he was elected president. He was only 51 at the time.

Under Ferris, Raymond has grown and expanded its activities. In particular, its overseas construction work has increased to the point where it now accounts for more than half the company's income. This is particularly significant for a firm that has been primarily known as a foundation subcontractor.

Ever since 1897, when Alfred E. Raymond patented his first concrete-filled pile, the firm has been constructing foundations—for buildings, docks, and other installations—in the United States. As such, it has been a subcontractor to many large construction companies. For most of those years, Raymond has also been a general contractor—but only outside the United States. This is understandable; the company could not afford to compete in heavy construction with the very firms that give it subcontracts.

Earlier this year, in recognition of the increased importance of its overseas work, the company changed its name from Raymond Concrete Pile Co. to Raymond International Inc. The domestic foundation work and other activities are being carried on by Raymond Concrete Pile Co. as a subsidiary.

Eye on overseas work

Although he heads the entire organization and supervises domestic as well as foreign operations, Ferris shows a special interest in the heavy-construction work overseas. He spends at least half of his time on the go, visiting projects, conferring with clients in various parts of the world, and bringing his particular brand of ingenuity to bear when a project runs into a problem.

Overseas construction is becoming more competitive all the time, Ferris reports, both because more United States firms are seeking foreign work, and because foreign firms are themselves now acquiring the capital to

side-
position
(above).
ne. It
ly lift
extra
o 110
d jib.

est you

ES
on 75% of
machines

-ft. radius

-ft. radius

-ft. radius

-ft. radius

-ft. radius

-ft. radius

-ft. radius

-ft. radius

-ft. radius

-ft. radius

-ft. radius

distrib

MUD-JACK

NEERS

bid in competition with the big American outfits. At the same time, overseas work presents challenges quite different from those encountered in work in this country, although the profits are commensurate.

Asked what advice he would give a construction firm planning to go into overseas work, Ferris offered these suggestions:

1. Know all there is to know about the country and its customs before you move in.
2. Have plenty of capital.
3. Plan to use new equipment when you go into a country for the first time, and predetermine the ultimate disposal of the equipment before you submit a bid.

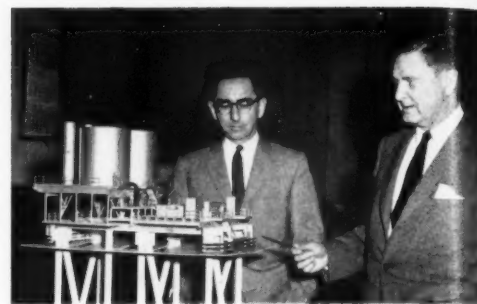
As to the first point, Ferris explains that the contractor is liable

to run into all kinds of unfamiliar circumstances in overseas work. Not only will soil and climate conditions and other obvious aspects of construction differ, but local customs, superstitions, religious practices, and other influences governing native workmen will vary. And the importance of these latter factors should not be underestimated.

The Raymond company has an extensive file in its New York offices covering just these matters. Every once in a while it has to do some research on a country or area in which it has never worked.

With regard to the second point, Ferris points out that a considerable capital outlay is required in overseas work. Much time and money must be spent in mobilization long before the

Raymond engineers are continually designing new types of installation. Here Ferris (right) and G. William Bailey, Raymond's chief engineer, inspect a model of an offshore oil flow station.



work actually begins.

On the subject of equipment, Raymond finds that it is the best practice to use new equipment on overseas jobs, especially when moving into a

country or area for the first time. Spare parts are not so readily available as in this country, so maintenance must be kept to a minimum. Too, the company always tries to determine the salvage market for equipment before it goes into an area; it would obviously be too expensive to transport equipment back to the States after a job in some remote part of the world. As it is, the company has an equipment freight bill for both domestic and overseas work of several million dollars each year.

Special labor problems

The labor situation in foreign countries quite often complicates the project. Native labor is, of course, used wherever possible, with supervisory personnel from Raymond's permanent organization. But this means that workers unfamiliar with modern construction machinery and practices must be trained, and Raymond quite often finds itself setting up schools, months ahead of the start of work, to train its crews.

American contractors working overseas also must be careful not to upset the native labor wage scale. In most cases, the contractor works closely with the foreign government in this matter.

Ferris tells of the instance when Raymond, working on a project in a country where labor was extremely cheap, was paying the standard wage of 4 cents an hour—along with a daily allotment of rice. The native laborers struck for an additional 2 cents an hour, which, while not an exorbitant amount, would have meant a wage increase of 50 per cent. Raymond had no choice but to sit out the strike, for the government forbade the contractor to upset the going wage scale by granting this increase.

Raymond will have as many as 15 overseas jobs going at one time, and in the years it has worked in foreign countries the company has built 1,275 installations in 34 countries. These contracts represent an overall investment of more than \$1.4 billion.

Its permanent organization of nearly 600 people includes some 70 superintendents in the overseas division, many of them bilingual.

In addition to its concrete-pile foundation work, Raymond occasionally performs highly specialized jobs in this country, both alone and in joint venture. An example was the first "Texas Tower" radar station off the New England coast, a project



NEW... 3-axle tandem vibratory roller

CONCENTRATES
2,000 TO 2,800
VIBRATIONS PER
MINUTE WITHIN
CONTROLLED AREA

Greater densification of materials with fewer passes . . . compacts deeper lifts of material

Now, Buffalo-Springfield brings you a sensational new development in vibratory compaction, that concentrates all vibrations within a confined ground area. That's be-

PERFORMANCE REPORT — At a new airbase, 3-axle tandem vibratory roller was tested on 6-inch lifts of crushed, bank-run gravel, to which mineral filler and slag had been added. Result: over 100% density in not more than 3 passes.

cause the vibrating roll is in the center position on the new Buffalo-Springfield® KX-25EV. End guide roll, and the drive roll maintain full surface contact at both ends of the roller — and allow no vibrations to escape or dissipate beyond these contact points. All vibratory effort is exerted in a downward direction.

A separate engine, mounted on a sub-frame on the center roll, transmits power through V-belts to an eccentric axle shaft, which runs through the center roll. Eccentric shaft turning at high speeds creates a vibrating action on the roll. Normal operating speed — 2,000 to 2,800 vibrations per minute. Unit is controlled from the operator position. Rate of vibration is regulated from same position through

throttle control cable. Center roll revolves freely on eccentric shaft, regardless of vibrations per minute, to match roller travel speeds.

Retains "walking-beam" feature

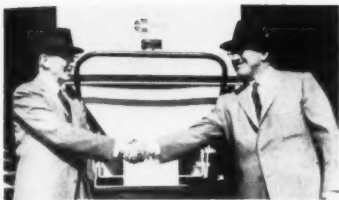
When vibrating action is not required, the independent power unit is merely turned off — and the KX-25EV becomes a standard 3-axle tandem with exclusive "walking-beam" compaction control! And that's not all. Hydraulic control raises the center roll, to operate machine as a long-wheelbase 15-20 ton 2-axle tandem. You've never seen anything like it — a vibratory roller, a 3-axle tandem with "walking-beam" compaction control, and a 15-20 ton 2-axle tandem — all in one machine. For more detailed information call Buffalo-Springfield distributor.



BUFFALO-SPRINGFIELD ROLLER CO.
SPRINGFIELD, OHIO • DIVISION OF KOEHRING COMPANY

B802-N

For more facts, use Request Card at page 18 and circle No. 408



Frank M. House (left), president of H. S. Watson Co., shakes hands with Robert T. Nonken, vice president of sales for Creative Metals Co. Watson will handle national sales for CMETCO construction machinery.

Watson takes over sales for CMETCO equipment

The H. S. Watson Co., Emeryville, Calif., manufacturers of the Watson-Brown-Lipe auxiliary transmission, has taken over sales for CMETCO construction machinery, products of Creative Metals Corp., also of Emeryville. Watson, acting as CMETCO's sales organization throughout the United States and Canada, has its sales program headed by Richard S. Pershing, the firm's vice president and general sales manager.

(Continued from preceding page)

which Ferris reports was the most fascinating he has ever seen.

\$500,000 for research

For all that the overseas work is becoming more and more important in the company's operations, the concrete-pile foundation is still a major Raymond item. On the average, the firm will have 30 such jobs under contract in all parts of this country. About half a million dollars is spent annually on research to improve the Raymond pile, its applications, and its installation processes. The company designs and builds its own pile-driving rigs and hammers, and uses them until they are worn out; there would be little trade-in value on these big specialty rigs.

Other specialized work is being studied by the company engineers with the possibility that the company will expand its domestic operations, Ferris reports.

In the meantime, the outlook is good. Although overseas work is becoming more and more competitive, Ferris feels there is a good profit to be made in this work by the experienced contractor. As for construction in this country: "There'll be no recession in heavy construction; the government will always be building."

When this world contractor isn't hopping from domestic job to foreign project, he lives with his wife and two daughters in the family's New York apartment or Stamford, Conn., home. Like many another successful businessman, his work is his hobby, but he likes hunting and fishing for relaxation. And he's happiest when a trip to the field will give him an chance for some fishing on the side.

Most of his energy, though, is poured into his first love—construction. This, plus liberal amounts of the Ferris ingenuity and resourcefulness, helps to explain the success of both the man and the firm.

THE END

Case history: Estimated savings of \$2,000, plus 30 per cent in drilling time, were reported by a Canadian contractor on the first month's performance of his Penn-drill Model B Testbore. The F. E. Johnston Drilling Co., Ltd., of Ontario, also expressed high regard for the unit's technique in getting comparatively undisturbed samplings. The increased efficiency and savings were attributed to the Testbore's automatic 30-inch free-fall hammer blow; 6-foot hydraulically actuated stroke; ability to change quickly from auger to core drill. For further information about the Testbore, write to the Penn-drill Mfg. Division, **Pennsylvania Drilling Co.**, Dept. C&E, 1205 Chartiers Ave., Pittsburgh 20, Pa., or use the Request Card at Page 18. Circle No. 117.



In a recent test cutting 3 day concrete, one Felker DI-LOCK diamond blade cut a total of 8,000 feet 1" deep against 3,500 to 5,000 feet for competitive blades cutting to the same depth! Aggregate was gravel, flint and quartz. Blades were all operated on the same 36 h.p. concrete cutter and on the same job.

THIS IS ANOTHER TYPICAL CASE HISTORY OF DI-LOCK SUCCESS—

Reports keep pouring in from all over the nation with the same impressive facts...*more footage, faster cutting, greater economy per blade!* If you want lower cost per cut there's one sure answer proved by contractors from coast to coast! Specify Felker DI-LOCK'S, America's longest-lived diamond blade!

See your Felker Distributor or write for information.



First in Diamond Cut-Off Blades!



FELKER MANUFACTURING CO.

Torrance, California

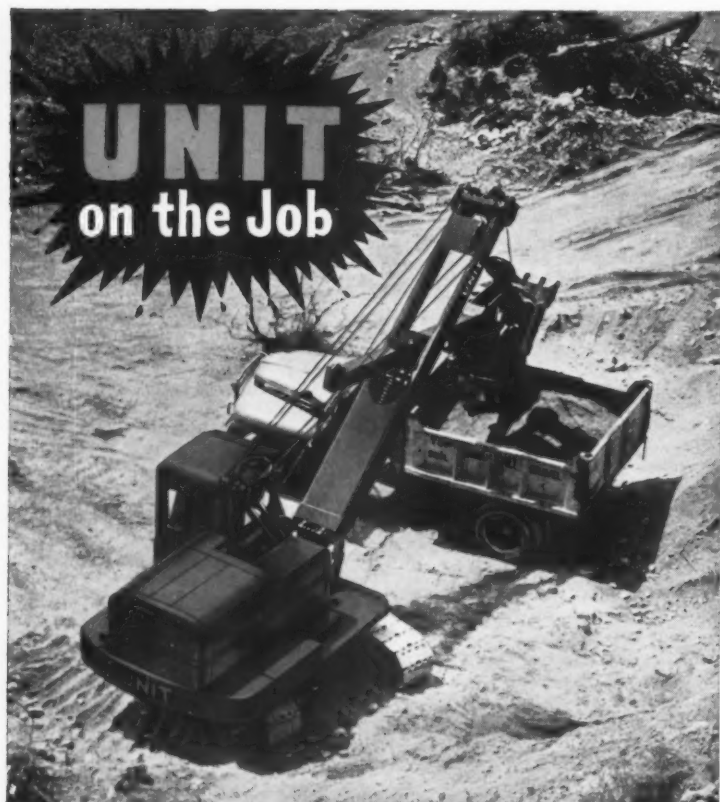
For more facts, use Request Card at page 18 and circle No. 409



Five craft in the M-K fleet stand parked on the apron of the Boise airport. Left, behind the Twin Beechcraft, is the LB30 4-engine transport. Right, behind the Aero Commander, are two DC-3's.



Big contractor operates fleet of seven aircraft



SWING SPEED makes PAY LOADS!

Here's a UNIT 1/2 Yard Shovel doing a PRODUCTION DIGGING JOB in a gravel pit. UNIT owners like the ease of operation and the FULL VISION CAB for complete visibility. They also like the sturdy construction and the many mechanical features, plus the ECONOMICAL PERFORMANCE and LOW UP-KEEP which all add up to EARNING POWER. Why not investigate what UNIT can do for you — on YOUR next excavating and material handling job?

SEE FOR YOURSELF: Let us send you our novel TV Brochure. It illustrates the complete UNIT line.

UNIT CRANE & SHOVEL CORPORATION
6309 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.



1/2 or 3/4 YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS... GASOLINE OR DIESEL



All Models Convertible to ALL Attachments!

For more facts, use Request Card at page 18 and circle No. 410

Air transportation has become an indispensable factor in the operations of one of America's large contractors, Morrison-Knudsen Co., Inc., Boise, Idaho.

The company owns and operates seven aircraft, hires and leases many more for specific uses, and uses commercial air carriers for transportation to and from its construction jobs throughout the world. M-K goes a step further and does maintenance on its own aircraft.

Planes of the company-owned fleet range in size from the big 4-engine Consolidated LB30 with a capacity of 34 passengers or 14,000 pounds of cargo, down to a pair of 4-place Cessna 180 single-engine ships. The other aircraft in the fleet are two Douglas DC-3 airliners, each of which can carry up to 15 passengers; an 8-place Twin Beechcraft D-18S; and a 5-place Aero Commander.

Some of the ships are assigned for the specific use of certain top executives of the company, although other employees also make the flights when

their schedules and destinations match those of an M-K official. One of the DC-3's is used by H. W. Morrison, M-K president, for all domestic travel. When visiting foreign projects, Morrison uses commercial air lines.

This plane, known as The Lady Ann in honor of the late Mrs. Morrison, is luxuriously fitted to accommodate up to 15 passengers. Carpeted floor, beautifully upholstered seats, leather trim, and attractive drapes lend the interior a look of luxury. Twin studio couches at the forward end of the cabin enable a tired executive to catch a few winks of sleep. Cleverly designed tables with hinged leaves fit between the seats so that plans can be spread out for study or a conference during flights. These also serve as desks where important company business receives the kind of attention it gets in the home office.

The second DC-3 is assigned to J. B. Bonny, vice president and general manager of the company. Fitted much like Morrison's plane, it also serves as a flying office. Bonny, how-

L-20 White ASPHALT PLANT

**PAYS FOR ITSELF
IN 38 DAYS!***

*\$13,900 F.O.B. Elkhart is price of portable model illustrated. Stationary model, \$13,400 F.O.B. Complete, ready to operate. Prices subject to change without notice.



Make your own hot mix asphalt with this new WHITE plant and save up to \$2.30 a ton. At its capacity of 160 tons an 8-hour day, that's a savings of \$368.00 a day. Thirty-eight of those days pays for the L-20!

Produce any type mix you can get from a \$100,000 plant: hot, RC, MC, SC and emulsified for top

course, base course, one course, or patch. Two men operate. Capacity is rated at a hot 325 degrees.

The L-20 will supply black-top for suburban streets, driveways, parking lots, school yards, or state highway maintenance.

See your nearest distributor or write direct for full information.

White Manufacturing Company, Elkhart 9, Indiana

For more facts, use Request Card at page 18 and circle No. 411



Morrison's personal plane, a DC-3, is The Lady Ann, named for his late wife. The plane, with two 1,350-hp engines, cruises at a speed of 180 to 190 mph.

The interior of The Lady Ann is designed for business as well as comfort. Tables with leaves fit between the seats for work during flights.



Morrison-Knudsen has own maintenance staff for planes carrying executives, project supplies

ever, frequently uses the commercial air lines on long flights even within the country. He may have his crew fly him to Denver or Salt Lake City, where he can catch a fast nonstop airliner to his destination. The crew returns to Boise and waits for instructions to pick him up on the return trip.

Bonny is a licensed commercial pilot fully capable of flying the DC-3. On long trips he sometimes spells one of the regular crew members on one leg of the flight.

Both DC-3's are equipped with two 1,350-hp engines and have cruising speeds of 180 to 190 mph. They are fully equipped for instrument flying, with the best and most complete instruments available. Although the cabins are not pressurized, a supply of oxygen is carried for the comfort of the passengers when flights are made at high altitudes.

The company's Los Angeles headquarters and James N. Wells, vice president and district manager, are

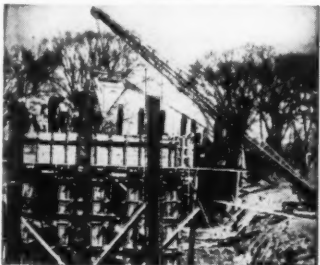
(Continued on next page)

CIMCO

Patented TWIN or TRIPLE BIN cuts costs up to \$6 per cubic yard.

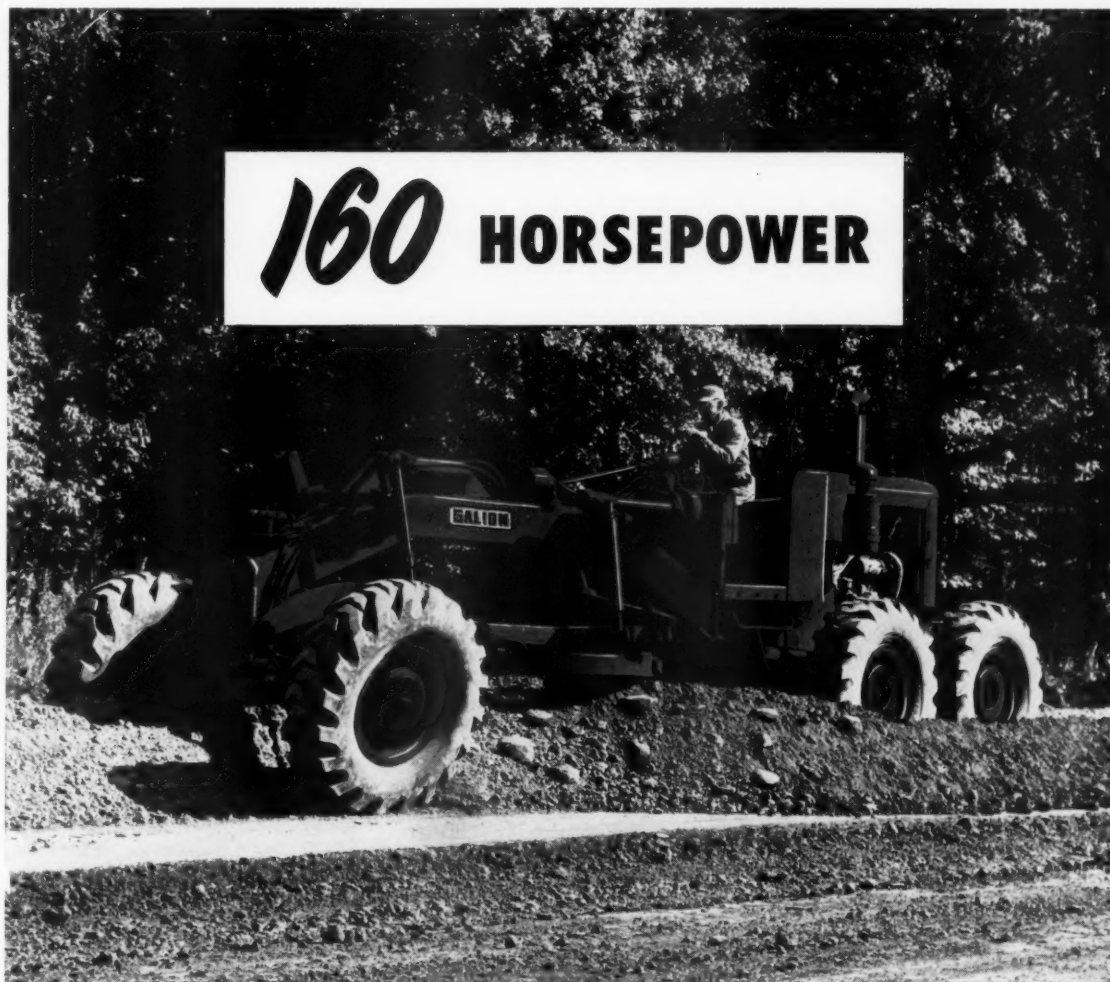


CIMCO TWIN BIN and BUCKET team cut concrete costs \$4.85 per cubic yard.



For complete information, specifications and prices on all CIMCO products, write: CIMCO, Box 422, Marshalltown, Iowa.

For more facts, circle No. 412



160 HORSEPOWER

GALION MODEL 160

Six-speed,
constant-mesh transmission.

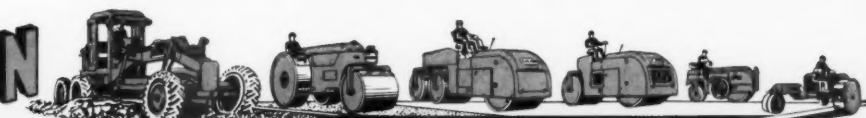
Weight... 30,020 lbs.

Available with creeper transmission and Hydra-Tilt moldboard.

Write for Bulletin 421.

THE GALION IRON WORKS & MFG. CO.
General and Export Offices—Galion, Ohio, U.S.A.

GALION
ESTABLISHED 1907



MOTOR GRADERS & ROLLERS

For more facts, use Request Card at page 18 and circle No. 413



The LB30, a commercial adaptation of the Liberator bomber, takes off for an Alaskan job. The Alaskan work horse for the company, it carries a work load of 14,000 pounds of freight and has a cruising speed of 190 mph.



Barrels of gasoline are unloaded at an airstrip at Cape Romanzof on the Bering Sea for an M-K project. Note the snow and ice that cover the ground at the top of the cut.

Roebling Presents THE NEWEST CONCEPT IN WIRE ROPE

*Herringbone**

*two
ropes in
one!*

Here is a combination that has proved itself during three years of field testing. A welcome addition to Roebling's great line of wire ropes, Royal Blue *Herringbone* is both a regular lay and lang lay wire rope!

So, in one rope you have the greater flexibility and abrasion resistance of lang lay construction *plus* regular lay's superior stability under severe operating conditions.

Preformed *Herringbone* is made of two *pairs* of lang lay strands, and two strands of regular lay which separate the two *pairs* of lang lay—all of it made of Type 1105 rope wire.

For three years *Herringbone* has been used for general hoisting, holding and

closing lines, shovel ropes, wagon scraper ropes and dragline ropes. Without reservation, its performance has been superior to that of any other rope used for the same jobs... even in the hands of inexperienced personnel! *Its proven capabilities clearly suggest its use for all jobs where steel core ropes are normally used.* See your Roebling salesman for all the facts or write Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey. Roebling *Herringbone*, the two-in-one rope to meet the doubly stringent demands of today's economy.

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation

*Reg. app. for

HERRINGBONE
WIRE ROPE

For more facts, use Request Card at page 18 and circle No. 414

(Continued from preceding page)

served by the D-18S Twin Beechcraft. This ship provides rapid transportation to jobs and potential job sites in the large area covered by the Los Angeles branch, and makes it convenient for Wells and his staff to visit the home office at Boise as often as necessary.

A smaller twin-engine plane, the Aero Commander, is stationed at Boise for the use of vice president and assistant general manager James D. McClary and other executives. Carrying up to four passengers and the pilot, the Commander has two 260-hp engines and a cruising speed of 170 mph.

McClary, who speaks Spanish fluently, looks after a good deal of the firm's business in Mexico and sometimes flies to and from Mexican projects in the Aero Commander.

Two Cessna 180 single-engine planes serve jobs in relatively remote areas. One of these currently makes daily flights from Boise to the Brown-

Sasgen

**Derricks
Hoists
Winches**

Over 50 years serving
contractors... easily
rigged on the job...
conservatively rated
for safety... simple
in design... low-cost
maintenance.

See your dealer... or
write for latest catalog.

Sasgen
DERRICK COMPANY
3127 W. GRAND AVE., CHICAGO 22, ILLINOIS

For more facts, circle No. 415
CONTRACTORS AND ENGINEERS



All but major engine overhauls are handled by M-K mechanics at the company's hangar at the Boise, Idaho, airport. One of the crew installs the engine housing on a DC-3 after making an engine check.

lee Dam site in the rugged Hell's Canyon area of the Idaho-Oregon border, carrying personnel as well as such things as supplies and mail. The other Cessna is doing a similar job for the Kings River project in California. It flies from Fresno to Wishon. At the job sites, these small planes use airstrips that are too short to accommodate the larger planes of the fleet.

The Alaskan work horse

The work horse of the M-K fleet is a Consolidated LB30 4-engine transport which serves the Alaskan operations. This ship is the commercial version of the B-24 Liberator bomber of World War II fame. Four 1,200-hp engines give it a cruising speed of 190 mph with up to 34 passengers or 14,000 pounds of cargo.

Hauling everything from personnel to fuel, materials, spare parts, and construction machinery, the big LB30 serves a series of remote projects beyond the Arctic Circle where other means of transportation are practically nonexistent. In construction of these remote weather, radar, or com-

(Continued on next page)

This well equipped electrical and instrument shop in the hangar is screened so that delicate equipment can be checked and adjusted without interference from outside signals. Radio technician Neal Welch is checking an ARC omnidirectional range receiver.



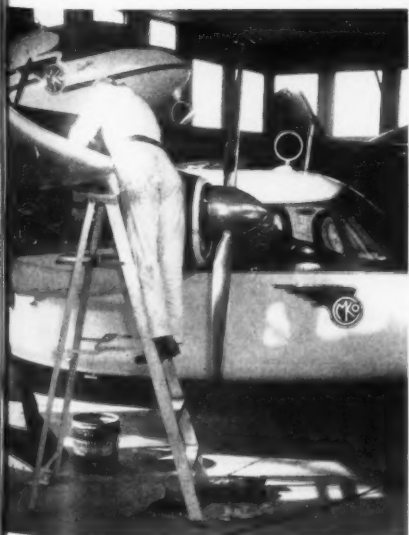
MASTER

simplest vibrator you can get

This is our "1-Man" vibrator. One man operates it instead of the two men needed on other types of vibrators. The entire unit is moisture-proof, the switch is at your finger tips and a standard electric cable plugs into any AC or DC power source. The ultra-high vibration won't damage your forms and there's no engine or flexible shaft to service. Contractors have bought more of these simplified, lightweight (25 lbs.) vibrators in the last three years than

any other type. They say the "1-Man" is best for 80% of their jobs and that the other 12% is best handled by a flexible shaft vibrator with enough "kick" to move many pounds of low slump concrete quickly. We agree. For a catalog on the "1-Man" or our complete line of vibrators, power trowels, portable generators, space heaters, compactors, and the new bridge deck finishing machine, drop a card to Master Vibrator Company, Dayton 1, O.

For more facts, use Request Card at page 18 and circle No. 416



Spark plugs are replaced in an engine of the Aero Commander during a checkup. Vice president and assistant general manager James D. McClary and other executives use this plane. McClary frequently flies to Mexico to look over M-K projects.



This Cessna 180 single-engine plane is one of two that serve Morrison-Knudsen jobs in remote areas. Malcolm Parsons, the plane's pilot, stops for the photographer.

(Continued from preceding page)

munication stations, dog sleds, helicopters, or snow tractors usually bring in the first men and equipment. When these pioneers get themselves established, their first job is usually to build an airstrip so that ships like the LB30 can bring in almost everything needed to complete the project.

Carrying everything from lettuce to compressors, the LB30 has hauled more than 2.5 million pounds of cargo more than 200,000 miles since arriving in Alaska in 1952. This ship, manned by three crews, sometimes works around the clock to supply vital materials to a remote project.

Replaces older ship

The LB30 presently in operation replaced a similar ship that had proved highly satisfactory in the Arctic. When the time came for replacement, the contractor immediately began looking for another plane of the same type. One of the few remaining models turned up for sale in Greece. M-K found it in satisfactory condition, bought it, and flew it back to the States. After some reconditioning and remodeling, it replaced its sister in the Alaskan service.

Whenever projects in Alaska or northern Canada require more air transportation than this one ship can supply, other craft are hired locally. At one time during World War II, M-K had every available plane in the north country under charter or lease, supplying crews who were rushing a series of air bases to completion on a crash schedule.

Lack of priority

During the war years, when M-K was building for the armed services at many points on the globe, it was not too difficult for top company officials to obtain priority for business flights on air lines and, consequently, there was little demand for the company to provide its own transportation.

At the end of the war, there were no more priorities for contractors, but it was almost impossible to make commercial flights without priorities. This played an important part in the founding of the M-K executive plane fleet.

The first planes in the fleet were two Twin Beechcrafts. A short while

later, two Douglas DC-3's were purchased for the use of the Seattle and Alaska Districts. Later, the Twin Beechcrafts were replaced by two more DC-3's—the planes that Morrison and Bonny now use.

Because of the relatively remote location of the company's headquarters at Boise, Idaho, and because of its lack of adequate and convenient facilities for the maintenance of aircraft, M-K has set up maintenance shops and staffs at the Boise airfield.

An unused World War II hangar is the maintenance and operations base for ships working out of the home office. The 120-foot-square hangar houses four or more of the planes, and the lean-tos around three sides provide adequate shop, office, and storage space. The shops include an engine

overhaul room, sheet metal and machine shop, welding shop, lubricants room, paint shop, and a radio and instrument repair facility.

In addition to these shops, the hangar houses an office, parts room, and pilots' headquarters. The crews that fly the planes are full-time employees, and they are always ready to fly on short notice.

With the exception of the major engine overhauls, all maintenance of the planes is handled by the crew of seven regular employees, augmented by extra help when needed. The regular crew includes a foreman, three mechanics, a radio technician and a parts man.

Since there are limited maintenance facilities at the Boise airport, the M-K maintenance men are some-

Heltzel Flex-Plane E



UNITIZED BATCHING PLANTS to further speed set-up and dismantling time . . . to give you even greater on-the-job flexibility. The new Heltzel Unitized Plant—like these on a G. Toccalino & Son job in Detroit—is designed in three easy-to-handle sections that go together in minutes. This installation is set up as push-button drive-through for extra fast service. Batchers and scale unit is integral part of center section . . . a real time-saving innovation. (Note new Heltzel E-4 twin-batcher cement plant.)

2202

THE HELTZEL STEEL FORM AND IRON CO

CONTRACTORS AND ENGINEERS

and ma-
tricians
and in-
ps, the
s room,
e crews
ne em-
ready to
major
ance of
crew of
mented
ne reg-
three
and a
mainte-
airport,
some-

times called on to check a commercial airliner. Usually they only determine the cause of the trouble and report to the air line, so that the air-line crews can bring the proper supplies when they come to make the repair.

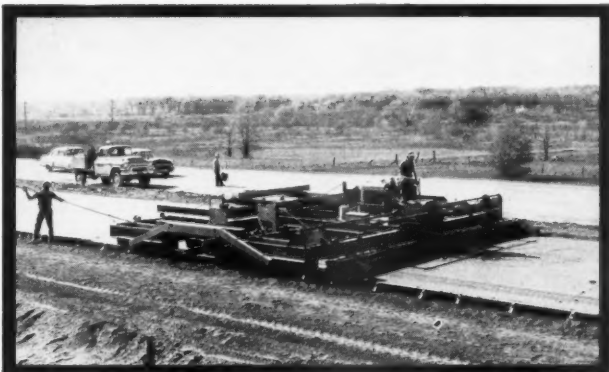
There is no nearby source of repair parts, but the parts room in the hangar is well stocked with the most commonly needed items. Several spare engines are kept on hand so that planes need not be laid up while engines are being overhauled.

Its record of well over five million miles of travel in a period of about 15 years show the M-K air fleet to be more than just a convenience. It is an essential time-saving operation that gets busy M-K executives wherever they have to go, fast. THE END

LOADING IN A ROCKY CUT on a road being built in Knox County, Tenn., this Euclid S-12 scraper is given a push-loading assist by an Allis-Chalmers tractor. In this area blasting had to be done to loosen the material. J. H. Hood & Son, Knoxville, is the contractor.



FLEX-PLANE COMBINATION FINISHER-FLOAT does two jobs in one, reducing crew time to an absolute minimum. The combining of these two jobs is a natural—results in a better finish in faster time. This new machine was thoroughly tested on several jobs last season. Contractors report 4000 feet of 24-foot pavement was floated and finished in a normal day with but two or three hand finishers required. Get the facts on this profit maker before submitting too many quotations.



Flex-Plane Engineering

brings you unitized batching, improved forms and a new way to finish concrete

Modern highway design demands top efficiency in highway construction machinery. Portable . . . versatile . . . automatic . . . fast.

That's why Heltzel Flex-Plane Engineering works to give you the most modern road-building equipment obtainable. Up-to-date engineering, for example, has produced a definite contractors' preference for Flex-Plane over all other makes. This preference is based, of course, on proved performance.

Find out now what Heltzel Flex-Plane Engineering can mean to you — call on actual users of Heltzel and Flex-Plane equipment, and prove to your own satisfaction that this is the *modern* equipment for modern highway construction.

HELTZEL DUAL DUTY FORMS, such as those shown in use on the Plattsburg SAC base, have been redesigned to assure fast setting and stripping with maximum strength-weight ratio. Sizes available to exactly suit your job requirements.



IRON COMPANY • Warren, Ohio

For more facts, use Request Card at page 18 and circle No. 417

MAIL THIS COUPON NOW!

MERCURY CLUTCH DIVISION
Canton 6, Ohio

Send me information on your 2 new clutches.
Possible application I have in mind is:

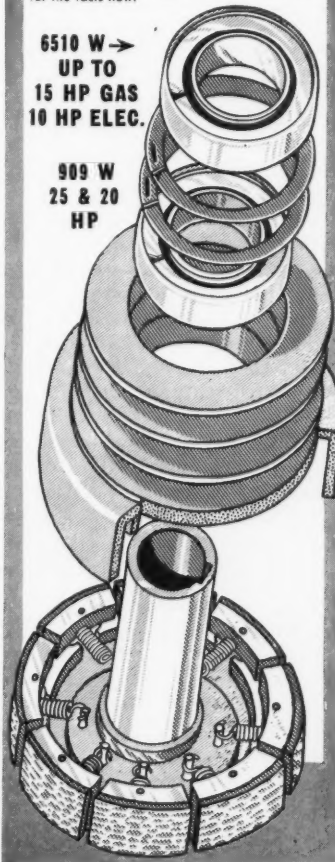
Name _____
Company _____
Address _____

2 New Mercury Clutches

Offering automatic operation, greater serviceability at a greatly reduced cost. Has anti-friction bearings, standard 1 7/16" bore and 5 1/2" x 3AB pulley assembly. Ideal for larger engines and motors up to 25 HP Gas, 20 HP Electric. Assures smooth pick-up, positive "no-slip" transmission of power, positive release at predetermined speed and protection against overload. Dependable, light weight, extra long life. Send for the facts now.

6510 W →
UP TO
15 HP GAS
10 HP ELEC.

909 W
25 & 20
HP



For more facts, use coupon or circle No. 501



Engineers buy time and speed with an electronic computer

**Consultant develops useful computer
programs to speed design and
actual field operations**

Electronic-computer programs, although important in consulting engineering offices throughout the country, are still in the process of development where the solving of everyday construction problems is concerned.

The New York City engineering firm of King & Gavaris has developed a number of programs for making speedy computations involved in the design of highways and bridges, and has recently set up a new program to assist contractors on foundation problems. This consulting firm regards the computers as extremely flexible tools that can be developed and employed imaginatively.

Inexperienced with the Royal McBee LGP-30 computer a year ago, King & Gavaris have since developed all types of programs to handle ever-recurring highway design problems. Philip King and Peter T. Gavaris, partners of the firm, are enthusiastic about electronic computation and hope for the day when it will be as universally accepted as work with the slide rule. Both King and Gavaris admit that it will take time to convince contractors and state highway engineers of the accuracy and flexibility of electronic computation. They feel that a period of "education" is necessary before computers are developed to peak efficiency.

King & Gavaris, at the request of foundation contractor Spencer, White & Prentis, Inc., New York, N. Y., developed a program to calculate the

true loadings of piles driven away from their design locations.

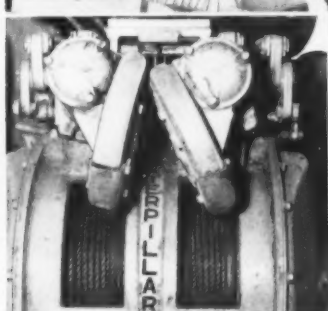
The New York City Building Code allows tolerances up to 3 inches between the driven and designed location of a pile. However, any pile deviation within a certain pile group that supports building columns causes a change in the loading on each pile in that particular group. For this reason, the loading on every pile in every pile cluster must be calculated, with the deviation from design locations taken into consideration. If any pile is overloaded, additional piles may be driven in the pile group or corrective measures applied to the column-load distribution method.

This analysis, even though relatively simple for an experienced engineer, is time-consuming and repetitious. The computer, working at a fantastic speed, can provide the results in a fraction of the time needed by an engineer. Engineers can be given other important tasks to handle, since clerical personnel are capable of preparing the problem input data for electronic computation.

The computer program developed by King & Gavaris can analyze as many as 30 piles in one group, and as many as 5 column loads on the group. As part of its foundation work, Spencer, White & Prentis, Inc., drove 400 piles for about 110 building-column footings. Fifteen different types and sizes of footings were involved, with a varying number of

IS CABLE BREAKAGE YOUR PROBLEM?

**CABLE CONTROLLER for
Caterpillar DW20 & DW21 Scrapers**



**Unco's Positive Control
Keeps This DW21 on the Job**

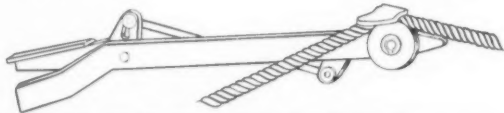
UNCO CABLE CONTROLLER

- ★ Eliminates causes of cable breakage—slack and overload
- ★ Entirely mechanical in operation—nothing to get out of order
- ★ Acts only when needed—entirely automatic
- ★ Reduces downtime to a minimum

Engineered to fit Caterpillar DW20 and DW21, the compact UNCO Cable Controller is easily installed in 3-4 hours. Requires no adjustments after installation, except to compensate for clutch wear in the P.C.U. Regardless of operating conditions, it pays for itself in a very short time. Built of the finest materials to give a maximum of service, it is indestructible by shock loads, and is engineered to the maximum breaking strain of the cable. It features working parts of hardened alloy steel high capacity roller bearings, rust-proofed shafts, oilite bearings on all moving pins and working parts sealed from dust and dirt throughout.

AT LAST!

A cable tool designed and built to handle cables.

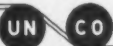


UNCO CABLE HANDLER

- Eliminates injury to hands.
- Cable can be rewound on winch, etc. by placing Cable Handler on cable and having operator rewind.
- Cable can be guided so there is no overlap or criss-cross.
- Saves cable replacement time.
- Allows cable to be pulled from winch, etc., by just placing it on cable and pulling.
- Cable can be put through wedge, bent with proper curve, reeved back down through wedge.

For further information write U.N. COMPANY, Inc.

Designers and Manufacturers of Special Devices

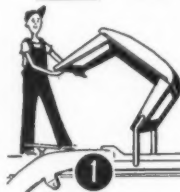


1255 Boylston St., Boston 15, Mass. • COpley 7-5225 • Cable: UNCO

For more facts, use Request Card at page 18 and circle No. 418

The NEW FOLD-A-WAY INDUSTRIAL CAB

UP or DOWN in Seconds



The NEW FOLD-A-WAY cab is now available on all Michigan front end loaders. Also Hough Models HO, HH, and HU. In the near future FOLD-A-WAY cabs will be available for all makes of front end loaders.

Industrial Cabs are available in all models of fully enclosed, semi-enclosed or canopy type for all makes and models of construction equipment. Order your Industrial Cabs from your favorite equipment distributor.



INDUSTRIAL CAB COMPANY

36 Jefferson Avenue, Salem, Mass.

Phone Pioneer 4-3959

For more facts, use Request Card at page 18 and circle No. 419

CONTRACTORS AND ENGINEERS



Dr. Charles P. C. Tung, left, supervising bridge engineer and chief programmer for King & Gavaris, discusses the new computer program with Peter T. Gavaris beside the company's Royal McBee LGP-30 computer.

piles for each. During the work, the contractor maintained pile-driving records which indicated the deviations from the design locations of the piles.

It took King & Gavaris three days to prepare a computer program to handle the analysis, after which the input data was prepared by clerical personnel from the pile-driving records and the contract drawings. This work, for the 110 footings, required 8 man-hours. It took the LGP-30 one hour and fifteen minutes to completely analyze the 110 pile-footing caps and to print the results. This means that one day after the contractor submitted the pile-driving records the computer had delivered the necessary findings.

The manual computation necessary to arrive at the same results would have required 75 engineering man-hours. This is almost two weeks' work for one engineer.

The saving in time was passed on to the contractor, and it meant money in his pocket. Before he could move the pile-driving rig off the job, he had to know whether or not more piles had to be driven. If the calculations had been done manually, the contractor would have had to let the rig sit idle until the computations were completed, or else move the rig and return it to the project later. In both situations, the contractor would lose money.

If the computer program had been in existence at the start of the project, the contractor could have submitted a daily pile-driving record to King & Gavaris to get results he could use the following day. This alone would have eliminated the need for repositioning the pile-driving rig if additional piles were required in a particular group.

Input data

The input data required for the pile analysis is divided into two classes. The first consists of the general data for all the pile caps shown on the contract drawings. This includes the design coordinates of all the piles within each group, measured from the design axes, and the identification and number of piles of each type.

The second class of input data includes the individual field data for each pile cap. Deviations of the driven piles, measured in both directions for each pile within a pile-cap

(Continued on next page)



"Snake-Style" wall for Omaha Auditorium grounds. Peter Kiewit & Sons, Omaha, Gen. Con.

Symons Forms on Serpentine Retaining Wall

Symons Forms were used exclusively to form this serpentine retaining wall which is 20 feet high at the highest point and slopes to 8 feet high at the lowest point. These walls were constructed to facilitate parking on the ground of Omaha, Nebraska's new city auditorium. Symons Forms were used for 30,000 square feet of forming on this job.

Send plans for your next job and get complete layout and cost sheet—no obligation. Catalog F-10 sent FREE upon request. Symons Clamp & Mfg. Co., 4251 Diversey Avenue, Dept. F-8, Chicago 39, Illinois.

For more facts, use Request Card at page 18 and circle No. 420



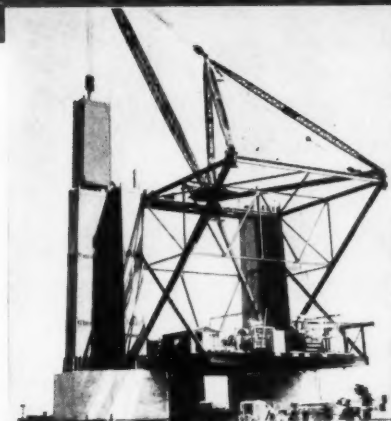
From suspension towers to completion

Clyde Hoists 'Pull' World's Longest Suspension Bridge Across Mackinac Straits

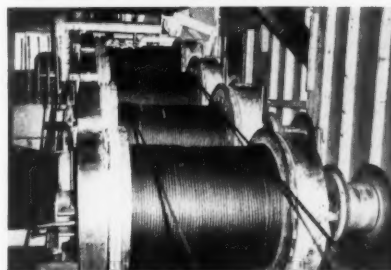
On the construction of the famous Mackinac Straits Bridge by American Bridge Division, United States Steel Corp., Clyde Hoists were used throughout the operation from erection of the suspension towers to completion of the bridge itself.

Time is big money on a project of this size. Any down time throws a monkey wrench into working schedules and makes costs climb rapidly. For dependable and continuous operation, leading contractors all over the world select Clyde Hoists. Their all steel bed and side frames provide exceptional ruggedness without excessive weight. Large diameter brakes and internal, expanding band friction clutches give smooth and positive load control. Anti-friction bearings throughout reduce maintenance... more advantages that owners and operators like in Clyde Hoists.

It takes a lot of features to add up to a superior quality, work-hungry hoist... one that will smoothly and swiftly spot loads with safety, without operator fatigue and without down time. All these and many other outstanding and exclusive features of Clyde Hoists are the result of the 60 years of engineering and manufacturing know-how that goes into every Clyde.



Powerful, 4-drum Clyde Hoists with 21,000 pound line pull operate the traveling derricks to set columns of the suspension towers on the Mackinac Straits Bridge job.



The husky brakes and band friction clutches of these mighty Clyde Hoists, made it possible to accurately position the heavy bridge members with ease and safety.

Write today
for complete information
on Clyde Hoists



CLYDE IRON WORKS, Inc.

Established 1899
DULUTH 1, MINNESOTA

HOISTS : DERRICKS : WHIRLEYS : BUILDERS TOWERS
UNLOADERS : CAR PULLERS : ROLLERS

For more facts, use Request Card at page 18 and circle No. 421

SAFE-T-FLARE BARRICADE SALES and RENTAL SERVICE

Extra Large
Head 7" Dia.



Sturdy Steel.
Sizes 24", 30", 40", 48".
CAUTION Reflectorized.
Legs fold.

If you Plan to Buy . . .
there's none so good at near
its price.

Featuring the SAFE-T-FLARE Transistor Econo-Flasher BARRICADE

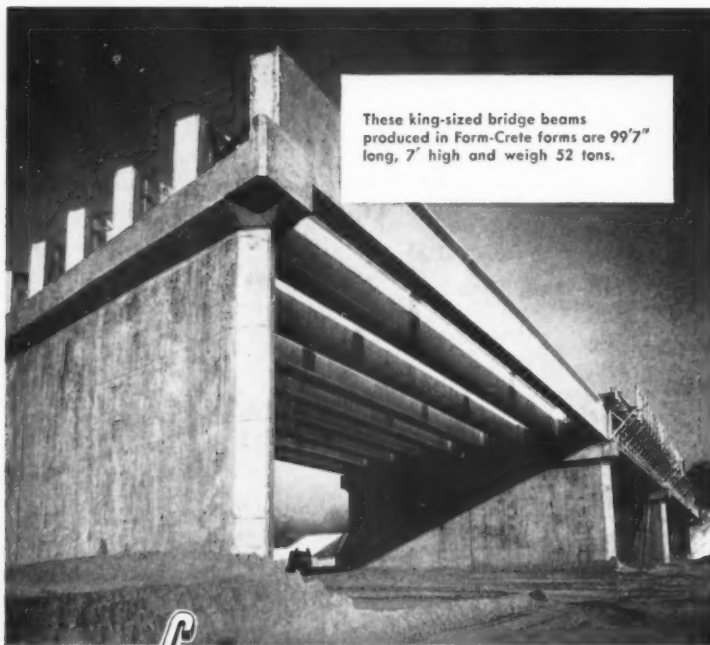
• 30% Brighter • Stays On 5 Times
Longer • No Moving Parts • Double
Transistor Circuit • Power Supply Guar-
anteed—2 Years

LOW COST RENTAL PLAN includes
delivery to job, efficient service, re-
placement of all parts, theft or damage
beyond repair—everything necessary to
do a superior flaring job!

SAFE-T-FLARE is the largest
rental firm servicing the en-
tire Nation.

WRITE • WIRE • PHONE for FREE Literature and current LOW Prices
SAFE-T-FLARE CORP. 2005 Armour Rd., North Kansas
City, Missouri, Victor 2-1329

For more facts, use Request Card at page 18 and circle No. 422

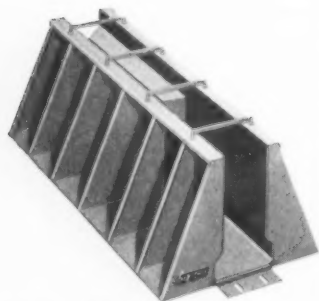


These king-sized bridge beams
produced in Form-Crete forms are 99'7"
long, 7' high and weigh 52 tons.

FMC FORM-CRETE

BRIDGE BEAMS

MEET REQUIREMENTS OF ANY CURRENT PRESTRESSING TECHNIQUE



Form-Crete P.C.I.-A.A.S.H.O.
approved bridge beams assure
national standardization, permit
quick setup and stripping time.



Putting Ideas to Work

**Form-Crete
Department**

General Sales Offices:
Lakeland, Florida — Riverside, California

#PF-13

FOOD MACHINERY AND CHEMICAL CORPORATION
FORM-CRETE Department
LAKELAND, FLA. • RIVERSIDE, CALIF.

Please send me a copy of your latest catalog.

Name _____
Company _____
Street Address _____
City _____ Zone _____ State _____

For more facts, use coupon, or Request Card at page 18 and circle No. 423

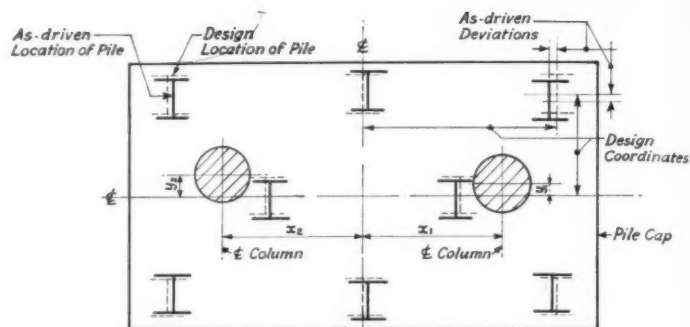


Figure 1—Pile Cap Plan

(Continued from preceding page)

group, are taken from the pile-driv-
ing records submitted by the con-
tractor (Figure 1). The design loads
on the footings are also obtained
from the column-load schedules on
the contract drawings.

Both classes of data are fed into
the electronic computer to calculate
the following items:

1. A new center of gravity for the
deviated piles.
2. Moments of the column load or
loads due to the eccentricity in
both directions.
3. Summation of squares of loca-
tion coordinates of each pile in
both directions.
4. Pile loads for each pile within
the pile group, evaluating the
effects of eccentric load and of
the eccentricity moments in
both directions.
5. A search within the computer
for the maximum loaded pile
and its location.

This program, with slight modifi-
cations, can be used to print out the
results for each of these steps. But
the contractor was interested only in
the answer to No. 5. At this particu-
lar step, the electronic computer re-
ceived a command to print the an-
swers for the particular pile group
under computation. An example of
the printed output for the Spencer,

White & Prentis project is shown
in Figure 2. This contains the input
data for a pair of footing caps, plus
the printed output showing the loca-
tion of the maximum loaded pile
and the value of the maximum load.

Photogrammetry

King & Gavaris is now developing
ways to use aerial surveys and elec-
tronic computations in the prepara-
tion of design contracts. Two such
contracts with the New York Depart-
ment of Public Works involved the
survey, design, and supervision of
construction on a 12-mile section of
the Empire Stateway near Water-
town, N. Y.

The first phase of the contract re-
quired the preparation of survey maps
along an approved, selected route.
For the field survey, King & Gavaris
used aerial survey and photogram-
metric methods, supplemented by
ground survey and mapping meth-
ods at road and railroad intersections.
This technique was approved by the
Public Works Department for the
first time in its design history. To win
the department's approval, however,
the consultants agreed to check the
photogrammetric mapping with the
ground surveys at the various inter-
sections and, if discrepancies were
found, to make the entire field sur-

STEEL
SCAFFOLDS

SWING
SCAFFOLDS

WORK
PLATFORMS

HOIST
TOWERS

TUBULAR STEEL SCAFFOLDING

for every "off-the-floor" job!

Contractors in more and more trades are
making Bil-Jax their headquarters for all
scaffolding equipment needs! Simplicity,
sturdiness, safety and low cost are stand-
out features. For scaffolding that's "just
right" for your kind of job, insist on Bil-Jax.

**NEW HI-LO
POWERED STIRRUP**

Capacity 500
lbs. Use single
or double. A
time and money-
saver.

SALES AND RENTAL OUTLETS
IN PRINCIPAL CITIES

EXPORT REPRESENTATIVE:
MELVIN PINE & CO.
125 Broad St.
New York 4, N.Y.

WEST COAST REPRESENTATIVE:
A. PALMER SCAFFOLD CO.
3928 San Fernando Road
Glendale 4, California

BIL-JAX, INC. • ARCHBOLD • OHIO

SCAFFOLDING • TRETTLES • HOIST TOWERS • STAGES

MAINTENANCE
TRETTLES

ALL-PURPOSE
SCAFFOLDS

SHORING
EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 424

CONTRACTORS AND ENGINEERS

vey with ground survey procedures.

The checks showed beyond any reasonable doubt that the maps prepared from photogrammetric methods were as accurate as the design required. Since this experience, all the new work awarded to King & Gavaris does not include such checking reservations.

All the preliminary drawings and estimates were prepared from the survey maps and submitted for the approval of the state highway department and Bureau of Public Roads. The 12-mile stretch was divided into two sections, and separate contracts were awarded in May, 1957. King & Gavaris, working with the aerial survey firm of Sargent-Webster-Grenshaw & Folley, Watertown, N. Y., to develop this method, is checking the accuracy of the combination of photogrammetry and electronic computation.

To "educate" everyone concerned, King & Gavaris is determining the contractor pay estimates along a test section of the highway, both by the use of photogrammetric methods and by conventional ground survey techniques.

According to latest figures compiled by the consultant, a volume computation to determine excavation pay quantities for the contractor shows that the results obtained by the photogrammetric method are about 1 per cent over those computed with ground survey notes. Because of these findings King & Gavaris feel sure that such construction engineering features as the setting of slope stakes and determining pay quantities of earthwork can use the photogrammetric mapping method.

At present, the firm is working to develop a program whereby the output of an electronic computer can be fed automatically to a plotter that will draw the exact cross-sections of a roadway. This will eliminate the

Figure 2

need for an engineer to convert the printed output into a drawing. Research is now under way, by manufacturers of electronic equipment, to develop converters so that information from photogrammetric plotters can be punched onto tapes, which will be introduced into a computer so that earthwork quantities can be obtained.

Work being done by King & Gavaris is pointing the way to further use of electronic computers to solve contractors' problems. One important use for the computer right now is in figuring and estimating bids.

The high cost of estimating readily becomes apparent if the man-hours for the work for one year are totaled.

The highly competitive nature of the construction industry and the need for increased engineering productivity demand speed and accuracy in many types of computations. Electronic computers hold the answers to many problems of the industry, and it is up to the men in the industry—including individual contractors—to explore fully the capabilities of the machines. THE END

Column No. 56 Pile Cap G12

0+290362'12'-0000000'2+100300'100'0'100'0'150'-0000100'400'0'200'-0000200'150'-0000100'-0000000'0+140430'994'-0000000''

Max. Load per Pile = 183.88 kips at Pile No. 3

Column No. 57, 58 & 58A Pile Cap J14

0+290362'14'-0000000'2+100300'200'-0000100'0'-0000100'300'-0000400'300'-0000150'200'-0000200'200'-0000100'100'-0000300'200'200'0'150'300'-0000250'150'-0000050'250'0'300'-0000150'200'-0000300'-0000000'0+140430'634'332'260'-0000000'0+100440'2'42'30'-0000045'-0000033'-0000045'-0000000'0+290462'3'-0000000''

Max. Load per Pile = 092.51 kips at Pile No. 1

CLEVELAND TRENCHERS

DIG CLEAN

- to exact width and depth specifications
- to perfect grade
- straight and fast

SAVE MORE

- on backfill material
- on hand finishing
- on right-of-way damage

MAKE MORE

- by higher production in all soil conditions
- with lower cost for all trench work



CLEVELAND 80W

LAYS PIPE

- large capacity side boom
- long reach

FILLS TRENCH

- fast, clean
- from either side

TAMPS FILL

- to compaction specs
- simultaneous with backfill



Before you bid your next job contact your local Cleveland distributor

The CLEVELAND TRENCHER Co.

20100 ST. CLAIR AVE. • CLEVELAND 17, OHIO



For more facts, use Request Card at page 18 and circle No. 426

LOW COST POWER for WRECKING-SMASHING

FREDERICK CAST Semi-Steel DROP BALLS

Tough, rugged Frederick Drop Balls eliminate expensive drilling, blasting... deliver smashing low cost power when you want it, where you want it. Exclusive "Pear-shape" design drops straight—swings true—withstands greater impact. Balls 4000 lbs. or over are made of extra durable nickel alloy—or special alloys furnished on request. "E-Z" Swing recessed steel eye gives greater cable protection plus free swinging action. Balls can be furnished with replaceable pins. Use Frederick Cable Weights (135 & 250 lbs.) and Frederick Swivels on all size balls for true, safe cable performance. Special release hooks for free dropping also available.

Wide range of sizes and weights

Pear shape (lbs.)	1500	2000	3300	4000	5200	6500	8000	10,000
Ball shape (lbs.)	500	1000	2000	5200				
Spherical shape (lbs.)	470	950	1650	2400	3000	3700	5400	6900

(for magnet use)

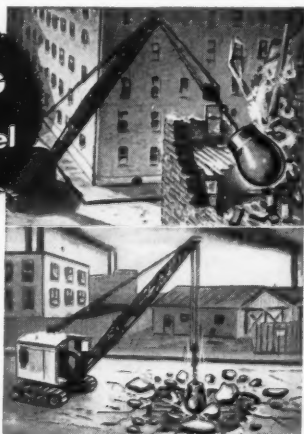
Write us today for prices and illustrated literature; order Balls direct or see your nearest Equipment Dealer.

FREDERICK IRON & STEEL, INC.
FREDERICK Established 1890 MARYLAND

Phone: MOument 3-5111

Makers of Manhole Frames, Covers and Steps • Storm Gratings
Meter Frames and Covers • Centrifugal Pumps • Grey Iron Castings

For more facts, use Request Card at page 18 and circle No. 425





management

This is the thirty-first of a series of articles on Construction Management by George E. Deatherage, P. E., construction consultant. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by Geo. E. Deatherage & Son, Satsuma, Fla. The manual is used in a training course for superintendents and project managers, and is directed primarily at those contractor employees who have reached the foreman level or its equivalent, and who need practical help in order to take complete charge of construction projects themselves.

Planning and production:

Job and labor accounts

At the core of a system for measuring labor costs are such jobs as time-keeping, time distribution to the cost codes, estimating the amount of work done, and calculating the unit labor costs.

Timekeeping is solely concerned with identifying employees on the job and recording the straight and overtime hours that each man works and is paid for. Trade-union rules stipulate the pay rates for regular and overtime work, holidays, and fringe benefits—sick-leave pay, vacation pay, and discharge or severance pay.

The timekeeper is primarily interested in recording the straight time and overtime hours paid to an employee. Fringe benefits do not enter into the unit labor costs, since these benefits would not compare with the hours checked in the field by the timekeeper. Field labor costs and fringe benefits are tabulated separately.

In timekeeping, therefore, only the actual work-shift hours and overtime are taken into consideration in checking time in the field, and these hours are the ones used by the estimator in building up composite labor prices. The hours cover the check-in to check-out time on the site.

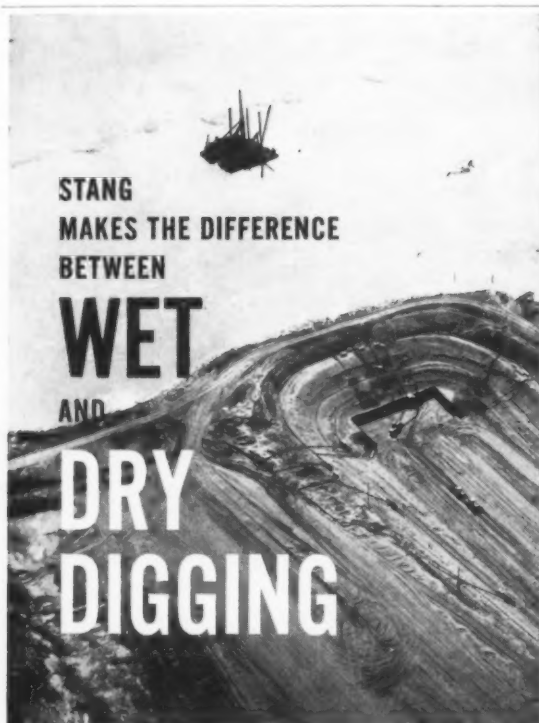
Checks on timekeeping

Whatever system of timekeeping is used, it is a good idea to have a double or triple check on employees' hours in order to prevent fraud. If only a time clock is used, it is best to have an actual field check by the timekeeper several times a day, or a spot check at times unknown to the employees. A further check on this is to have a foreman turn in an independent report on each employee's hours.

Added insurance can be achieved by having someone other than the timekeeper or foreman issue the payroll. If such a setup is in effect, the contractor can reverse the process periodically and without warning.

It is always a good practice to supply each employee with a button or badge, which he is bound to wear on his hat or jacket where it can be seen at all times. These buttons or badges carry the initials or emblem of the contractor's firm and the employee's number. Badges or buttons of different colors may be used to denote different crafts or departments. Sub-contractor badges may be of different shapes and colors.

The employee number on the badge identifies the workman on the payroll and enables the timekeeper to note the number of each man during field



STANG
MAKES THE DIFFERENCE
BETWEEN
WET
AND
DRY
DIGGING

Deas Island Tunnel approaches **DUG IN THE DRY**—thanks to Stang dewatering

On any project, you can depend on Stang to start the job right—IN THE DRY. Remember, the responsible handling of water, in any situation, is Stang's sole business. Don't fight water, and lose time and money doing it. For the practical, economical answer to all your water problems, call on water-handling specialists... call on STANG!

CONTRACTORS FOR THE APPROACHES:
Peter Kiewit Sons Co. of Canada,
Raymond International Co. and
B. C. Bridge & Dredging Co.

JOHN W. STANG CORPORATION

Engineers and Manufacturers of Dewatering Equipment, Wellpoint and Pumping Systems Dewatering Planning—Equipment—Service



BELL, CALIFORNIA
8221 Atlantic Avenue
Telephone: LUDlow 2-7421

OMAHA, NEBRASKA
2123 South 56th Street
Telephone: Walnut 7796

TACOMA, WASHINGTON
2339 Lincoln Avenue
Telephone: FULTon 3-3438

TULSA, OKLAHOMA
4026 South Urbana Street
Telephone: RIVERSide 2-6929

JOHN W. STANG CORPORATION
8221 Atlantic Ave., Bell, Calif.

Please send me your free 100 page Brochure, "The Stang Wellpoint System."

Name _____

Company _____

Address _____

City _____ State _____

For more facts, use coupon, or circle No. 427

BIGGEST THING in YOUR SHOP...

When some rusty bolt or shaft won't let go and it is tying up production... it can be the biggest thing in your shop. That is when Kano Kroil, the new chemical loosener, is worth its weight in gold. As one customer put it, "It's like an extra employee."

... "Five men, total weight of 825 pounds, using levers and sledges, struggled for an hour with a frozen shaft. No luck. So all went out for a smoke. One man, weighing 140 pounds used Kroil and by the time we returned, had lifted the shaft out with no leverage."



You Too Can Get This Result

Try Kroil at our risk. If it doesn't do more than you expect, return it and the charge will be cancelled. Get the Kroiler combination, one gallon of Kroil (regular price \$4.00) and Kroiler squirt gun for \$4.95 f.o.b. factory. Order direct.

KANO LABS.

1057 S. Thompson Lane
Nashville 11, Tennessee

For more facts, circle No. 428



ALL NEW!
GOOD ROADS
"ODELL"
SPREADER

...for asphalt and aggregate spreads up to 8-inch depths

Operated by only two men, contractors report savings up to 50% on average jobs with the "Odell". Spreads asphalt, gravel, coarse slag or stone, limestone, cinders, and other base material (up to 4" in diameter) to 8" in depth. Adjustable for spread widths up to 10 feet.

Accurate spread depth is controlled by the exclusive "floating" strike-off bar with new crown adjustment, mounted on runners independent of the roller and hopper.

Can be hitched to practically any standard size or model dump truck in seconds. For further information write:



GOOD ROADS MACHINERY Corp.
MINERVA, OHIO

For more facts, circle No. 429



by **GEORGE E. DEATHERAGE, P. E.**
construction consultant

checks. All badges or buttons should be turned in to the office before the workman leaves the firm's employ or draws all his pay.

Another system involves issuing a small brass disk to employees at the start of a new shift. The timekeeper hands the brass disk to the worker, whose number is stamped on it. At the end of the shift, the workman deposits the disk in a slot at the time office. This system is used only when there is an independent check of the men in the field; the record of the brass disk serves as a cross check.

Time-book system

On small jobs, the simplest time-keeping system consists of having the job foreman keep a record of each workman—name, hours worked each shift, overtime, craft, and rate—in a weekly time book. Time books are turned in weekly, and a new one is issued at that time for the following week.

Sometimes this procedure is varied by having the foreman turn in his time book each day and receive a new one for the next day. This enables the office to post the time to the payroll sheets each day. Under this system, the foreman can visit the office daily to discuss the progress of work and the materials to be ordered for the next day.

Another timekeeping process is the foreman's daily report, Figure 1, which lists the employees' names or numbers, crafts, rates, hours worked, and the distribution of each man's time to the cost code. This report is coupled with the daily labor distribution sheets, which are added together for each day of the work week. The total cost of each classification is stated on a weekly basis.

If, for instance, a concrete foreman uses the daily report to list the number of yards poured per day, the total yards per week can be divided into the total cost to determine the actual unit cost; this is to be compared with the estimated unit labor cost. The hours, rates, and expenses can be transferred daily from the foreman's report or from the daily distribution sheet to the payroll records.

It is also possible under this system to make up recapitulation sheets each day, instead of each week, and to have a daily unit cost check that shows where money is being lost or made.

Stock printed forms for the foreman's reports, daily labor distribution sheets, and recapitulation and payroll sheets can be obtained from the

[illegible]

THIS HARD-FACING ROD	FOR THESE CONDITIONS	FOR THIS EQUIPMENT	APPLI-CATION
VICTORTUBE	Severe abrasion	Ripper and ditcher teeth, dredge cutter blades, posthole augers, oil field tools, pug mill knives	ACETY. AC-DC ELEC.
VICTORTUBE BARE-30-DOWN	Severe abrasion	Agricultural tools	ACETY. ONLY
VICTORTUBE "SPECIAL"	Abrasion, severe impact	Oil field bits, rock bits	ACETY. ONLY
VICTOR TUNGSMOOTH	Thin cutting	Augers, bits, blades, screw conveyors, farm tools	ACETY. AC-DC ELEC.
VICTORITE	Earth abrasion, sliding friction	Farm tools, earthmoving rigs	ACETY. AC-DC ELEC.
TUBE VICTORITE	Abrasion, impact	Plow points and farm tools	ACETY. AC-DC ELEC.
VICTORITE 1	Corrosion, heat, abrasion	Chemical and food machinery, arbors, screw conveyors, soaking pit tongs	ACETY. AC-DC ELEC.
VICTORITE 6	Red heat, impact corrosion, abrasion	Forming dies, exhaust valves, cams, steam valves	ACETY. AC-DC ELEC.
VICTORITE 12	Heat, abrasion, impact	Saw blade inserts and other critical applications	ACETY. AC-DC ELEC.
VICTORITE CARBON ARC	High abrasion, thin deposit	Plowshares, lister shares, sweeps	CARB. ARC ACETY.
VICTORALLOY	Abrasion, severe impact	Crushers, dredge pumps and cutters, dipper teeth, tampers, rollers, idlers	ACETY. AC-DC ELEC.
VICTORALLOY #1	High abrasion, medium impact	Bucket lips, rock crushers, muller tires, gyratories	ACETY. AC-DC ELEC.
VICTORALLOY "A"	Angular shock, extreme impact, build-up	Clutch parts, gears, crusher plates, gyratory mantles, build-up for hardfacing	AC-DC ELEC. ONLY
VICTORALLOY "B"	Heavy impact, moderate abrasion	Tractor rollers and sprockets, shovel pads, plates, idlers, etc.	AC-DC ELEC. ONLY
VICTORALLOY "C"	High abrasion, moderate shock and impact	Tractor grousers, pressure rolls, crusher segments, roll crusher teeth	AC-DC ELEC. ONLY
VICTOR MULTI-PASS	Impact, compression, build-up	Drive sprockets and tumblers, rollers, idlers, churn drills, clutch jaws	AC-DC ELEC.

What's proper Victor rod for your hardfacing needs?

THIS CHART GIVES YOU QUICK ANSWERS

Use it to select right rods for prolonging operating life of your equipment. You'll be selecting rods that go on quickly and smoothly, thereby saving labor and downtime. Order from your Victor dealer TODAY.

FREE—For more detailed information on how to apply Victor hardfacing alloy to wearing parts, write us now for your copy of Victor Hardfacing Manual. It's free.

VICTOR EQUIPMENT COMPANY • Alloy Rod & Metal Division
13808 E. Imperial Highway, Norwalk, California Wakita, Oklahoma

THIS TYPE	FOR THESE CONDITIONS	ON THIS KIND OF EQUIPMENT
# 0	High abrasion, medium impact	Crusher rolls, rock crushing equipment
VA #1	Abrasion, medium impact	Crushers, scraper blades
VA #2	Abrasion, impact, Multi-pass application	Steel mill applications, tractor idlers
VA #3	Abrasion, light impact	Mill guides, crushers, dredge bushings
VA #4	Multiple layer build-up	Tractor rollers and idlers, sheave wheels
VA #5	Heavy impact, abrasion	Tractor rollers, idlers, mine car wheels, sheave wheels
VA #6	Medium abrasion, high impact	Crane wheels, drums, roll necks
VA #7	Abrasion, high impact	Build-up for hardfacing, mine car wheels
VA #8	Abrasion, high impact	Roll crushers, scraper and grader blades, tool joints
VT #60	Extreme abrasion	Tool joints, grader blades, scraper blades
Mo-Mn	Manganese build-up	Wherever manganese build-up needed

Geo. E. Drahtage & Son QUANTITY REPORT

DESCRIPTION OF WORK _____ DWG. _____
 _____ CODE _____
 _____ CONT. ITEM NO. _____ REG. NO. _____

MATERIAL & LOCATION	NO. PCS.	LENGTH	WIDTH	WEIGHT OR HEIGHT	QUANTITY	TOTAL	SKETCH

Figure 2

Frank R. Walker Co., Chicago, Ill.

Quantity reports

It is a good practice to provide special forms to report the amount of work in the field on the various kinds of construction. Such a form is shown in Figure 2. This is used to list the number of items going into a job, the quantity of each type, and the total quantity. A space is provided on the right-hand side for a descriptive sketch of the work done or for any pertinent remarks. When the foreman or engineer completes the form, he keeps it in his file. He reports only total quantities. The form may be

used as a guide for picking up work in the following week.

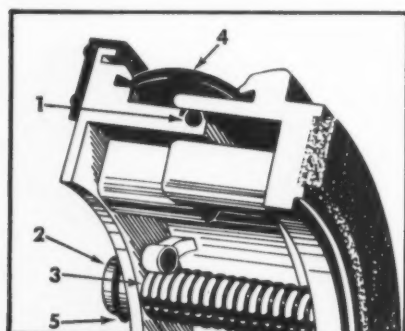
On large work, the code of construction accounts will cover hundreds of classifications. In these cases, it is a good idea to supply the foreman with only that part of the code which will affect his work. The mason foreman, for example, is generally interested in only a few accounts, and no more should be supplied him. If he has to use others, he can always secure the information from his superior or from the timekeeper.

The code of accounts should be typed on pocket-size cards and kept in a loose-leaf book. Timekeepers, general foremen, and others of that status are usually supplied with a complete master code.

When a foreman is having difficulty keeping his time and distribution records straight, it usually means that his men are poorly organized or are shifted from one class of work to another. This situation can be spotted by checking the daily labor distribution sheets. As far as possible, foremen should be discouraged from borrowing or lending men for work.

A series of punched cards makes up the basis of a timekeeping and cost-keeping system put out by the Le Feuvre Corp., 617 Oakland Road N. E., Cedar Rapids, Iowa. One of the cards is shown in Figure 3.

A numerical cost code is used for the cards. The foreman punches the required cost code numbers, using the digits above the Labor Cost Classification line. The hours worked on that specific cost classification are punched at the bottom of the card under Total Hours Worked This Shift. The foreman punches the number of the shift and one of the spaces at the right-hand side of the card, to show whether the general classification is administrative, skilled, or intermediate.



FEATURES

1. Special "O" ring inner seal.
2. Steel locating pins.
3. Equal pressure springs.
4. Flexible bellows.
5. Rubber grommets.



Sure-Seal®

FINAL DRIVE BELLOWS SEAL

Gives Double Protection Against Lubricant Loss

The final drive on Caterpillar tractors is doubly protected against lubricant loss and damage when Sure-Seals are installed.

In addition to the conventional outer bellows seal, Sure-Seal has an exclusive "O" ring inner seal riding between two metal flanges. Keeps lubricant in, dirt, water, foreign matter out—even if bellows seal ruptures!

Other Sure-Seal features that protect you against final drive damage, repair and lost time are:

Self-aligning, equal pressure springs, heat-treated for long life. Give right amount of pressure for good seal without excess friction and wear.

Steel locating pins on seal for D-7 and D-8 are more than 1½ times as strong as cast pins. Protects against destruction of seal due to shearing of pins in freezing weather.

Flexible, oil-resistant bellows of special rubber, ribbed for extra life, wear.

Rubber grommets on locating pins make installation easier. Install Sure-Seal Final Drive Seals on your tractor for sure protection. Made for D-9, D-8, D-7, D-6, D-4.

© Copyright 1957 by

Sure-Seal Equipment Co.
 1820 N.W. 25th Avenue, Portland 10, Oregon

For more facts, use Request Card at page 18 and circle No. 431

PRESS

"TRIPLE TAPERED" DUMP BODY

Designed primarily for handling sand and gravel, this new Press Dump Body features a 3 taper design which allows for greater load on the front end to take advantage of strict weight laws in various states. Press quality construction assures low maintenance cost — more yardage moved at lower cost. Get the facts today on Press Dump Bodies — Write for descriptive literature.

PRESS

TRAILER DUMP BODY

Designed to carry extra payload because of Press quality construction. Whatever your body requirements — you will find all of the facilities to build these bodies at Jacob Press' Sons. Before you buy your next body, write Press for quotation.

99 YEARS OF QUALITY BODY BUILDING
JACOB PRESS' SONS, inc.

SINCE 1859

503 W. 33RD STREET • CHICAGO 16, ILL.
 For more facts, circle No. 432

DE-WATERING PROBLEMS LICKED

FLYGT ELECTRIC PUMPS

Contractors throughout the world find FLYGT SUBMERSIBLE ELECTRIC PUMPS tops in performance on any de-watering problem. Users such as Bechtel Corp. and Peter Kiewit Son's Co. like FLYGT foolproof features, the advantage that the pumps work in any position, and the fact that they do not clog up. FLYGT PUMPS are low in initial cost, low in operating expense, require little attention — save you money. FLYGT SUBMERSIBLE ELECTRIC PUMPS range in size from 1½"-85 GPM capacity to 8"-3000 GPM capacity. Head capacities range up to 210 feet. Weights range from 80 to 1200 pounds.

CHECK THESE FLYGT FEATURES

✓ Electric	✓ Submersible	✓ Heavy Duty
✓ Resistant to Salt Water	✓ Will Pump High Amount of Solids	✓ Quick and Easy to Service
✓ Easy to Handle	✓ Operates Unattended	✓ No Installation Costs
✓ Low Maintenance Costs	✓ Runs Dry Without Damage	✓ No Priming Needed

WRITE FOR NAME OF YOUR NEAREST DEALER

Stanco
 MFG. & SALES INC.
 1666 Ninth St. (Corner of Olympic & Ninth)
 Santa Monica, California
 For more facts, circle No. 433

Labor distribution costs

If accurate labor costs are to be obtained, the total money spent for labor must be accounted for on the labor distribution sheets, and these must balance with the payroll totals. If this is not insisted upon, there is a tendency to slackness and inaccuracy.

If the contractor decides that, in order to save time and expense, he will require unit costs only on the major items, the cost department cannot state accurate costs. However, if the cost department must account for every penny of the payroll expense, and balance it out at the end of the payroll week with the payroll totals, there is less chance to be careless about the costs.

Periodic, final cost reports

For job management purposes, the project manager or superintendent should require labor control reports, which include a record of daily labor distribution, plus reports of daily and weekly unit costs as compared to the estimated costs. He should also require detailed cost analyses on items ex-

up work
construc-
hundreds of
es, it is a
man with
which will
foreman,
rested in
no more
e has to
ecure the
or from
ould be
and kept
ekeepers,
of that
with a
ng diffi-
distribu-
ly means
nized or
work to
e spotted
distribu-
le, fore-
om bor-
ork.
akes up
nd cost-
e Le Fe-
d N. E.,
he cards
used for
ches the
sing the
assifica-
on that
unched
er Total
ne fore-
the shift
e right-
o show
ation is
ermedi-

ceeding the estimated costs; a monthly estimate of the total probable cost of the complete job, including every item of cost incurred or to be incurred; and a final report.

The final report should include a record of the first cost of job, a brief description of construction operations, unusual difficulties, construction techniques, record of wage scales, major material prices, photographs, and other pertinent data.

If a job is to have an effective cost-control system the cost engineer must be thoroughly familiar with the terms of the contract, the job itself, the job progress schedule, and the estimate.

The cost engineer must be able to prepare a financial schedule so that management will know how much money will be needed to start and carry on the job, when payments on account may be expected, and their amount. The banker must know how the job was figured, how long loans are to extend, and when he can expect them to be repaid. This means that a budget, one of the vital tools of job control, must be prepared and followed carefully.

The efforts of the cost engineer are directed toward one goal: supplying simple, accurate records that give a full and perfect control over costs. If this goal is achieved, it is certain that all other requirements—budget reports, and reference and estimating records—will be in order.

(Next month's article will deal with "Planning and production: Work analysis".)

State highway contract awards during the first quarter of this calendar year totaled \$640 million. Contracts on federal-aid Interstate System projects are up \$40 million, compared with last year.

CONCRETE TESTERS

The World's Finest
Low-Cost
Precision Testers

For
CYLINDERS
CUBES
BLOCKS
BEAMS
PIPE

IF IT'S A CONCRETE TESTER
YOU NEED-GET IN TOUCH WITH

FORNEY'S, Inc.
TESTER DIVISION
P. O. BOX 310 - NEW CASTLE, PA.

For more facts, circle No. 434

Figure 3

HUNDREDS											TENS											UNITS										
9	8	7	6	5	4	3	2	1	9	8	7	6	5	4	3	2	1	9	8	7	6	5	4	3	2	1						
LABOR COST CLASSIFICATION																																
NAME _____											EMPLOYEE'S NO. _____											A B C D E F G H I J K L M N O P Q R S T U V W X Y Z										
S. S. NO. _____											DATE _____											MACHINE REPORT ADMIN. SKILLED ITERM.										
OVERTIME HOURLY RATE _____											AMOUNT _____																					
REGULAR HOURLY RATE _____											AMOUNT _____																					
THE HOURS PUNCHED AND THE RATE ABOVE ARE CORRECT AND APPROVED BY THE UNDERSIGNED.																																
EMPLOYEE'S SIGNATURE _____																																
TOTAL HOURS WORKED THIS SHIFT																																
SHIFT																																
1 2 3																																

LE FEBURE CARDS



Front wheels of BROS SP-730 roller oscillate as a unit, rear wheels oscillate in pairs to accomplish uniform consolidation by kneading. Far greater compactive forces are exerted than would be expected

under normal traffic. Finished mat has enough immediate stability to withstand effects of modern traffic and yet has maintained enough voids to provide flexibility.

New BROS SP-730 (30-TON) PNEUMATIC ROLLER—Achieves Maximum Consolidation of Flexible Pavements

● In a search for better compaction of asphaltic mats, the State of Ohio adopted specifications in 1956 for a self-propelled rubber-tired roller capable of wheel loads and contact pressures above the maximum produced by legally loaded trucks.

One such roller which met the new specifications was tested in 1957 to determine if it would consolidate a newly laid asphaltic concrete mat to the extent that the finished pavement would be stable under modern heavy traffic and still have enough flexibility to respond to any subsequent subpavement movement.

It was a Bros Model SP-730 (Self-Propelled, 7 Rubber-Tired Wheels, 30 Tons Maximum Weight) with three wheels forward and four wheels in the rear. Construction of the mat in no way varied from standard methods except that the Bros rubber-tired roller was used in place of the steel tandem roller usually operated behind the initial roller.

The Bros roller was used on a project

in Licking County to construct a three inch asphaltic concrete binder course over a base of five inches of waterbound macadam on an eight inch granular sub-base.

IN-PLACE DENSITY TESTS ON THE COMPLETED MAT, CONDUCTED BY THE OHIO STATE HIGHWAY DEPARTMENT, SHOWED AN AVERAGE VOID CONTENT OF 4.01% AND AN AVERAGE DENSITY OF 100.99%! VARIATIONS IN DENSITY AND IN VOID WERE, FOR ALL PRACTICAL PURPOSES, ELIMINATED. (SEE TABLE.) AND, WHAT'S MORE, DESIGN DENSITY WAS ACCOMPLISHED BY ONLY ONE PASS OF THE ROLLER!

Results of this test and of a second test on a similar project in Clermont County (which showed an average void content of 3.71% and an average density of 101.28%) are now available on request.

Can your state afford not to get asphalt mat compaction results similar to those described? Send for the complete report today. You'll be on your way with initial compaction that's final... to greater, longer-lasting pavement stability than has ever before been possible!

SP-730 RESULTS ON THE COMPACTION OF ASPHALTIC CONCRETE LICKING COUNTY, OHIO

Percent Voids	Percent of Design Density	Position in Cross Section (From C)
4.40	100.60	10 ft. ft.
4.90	100.10	4 ft. ft.
5.08	99.92	on c
2.73	102.27	4 ft. ft.
2.34	102.66	10 ft. ft.
4.69	100.31	10 ft. ft.
3.02	101.98	4 ft. ft.
3.93	101.07	on c
4.40	100.60	4 ft. ft.
4.11	100.89	10 ft. ft.
2.13	102.87	10 ft. ft.
4.58	100.42	4 ft. ft.
6.18	98.82	on c
4.14	100.86	4 ft. ft.
3.54	101.46	10 ft. ft.
4.01	100.99	AVERAGE



BROS Incorporated

ROAD MACHINERY DIVISION

1057 TENTH AVE. S.E.
MINNEAPOLIS 14, MINN.

Write today for the full report on the Ohio tests and for complete new literature describing the new BROS SP-730 pneumatic roller. It's free of cost or obligation!



SHEEPSFOOT TAMPERS



STEAM GENERATOR



BITUMINOUS CIRCULATOR



VIBRA-FACTOR



9-TON SELF-PROPELLED ROLLER



9 AND 13-TON ROLLERS

For more facts, use Request Card at page 18 and circle No. 435



Equipment financing plan can be more economical than outright purchase

by THOMAS E. LENIHAN, president,
C. I. T. Corp. New York, N. Y.

An equipment financing plan, sponsored by distributors who deal with the C. I. T. Corp., offers contractors a wide range of payment terms that enable them to take on new jobs and pay for the equipment at the same time.

Two financing programs are offered: one is for 36 equal monthly payments; the other is spread over six years, with payments geared to depreciation amounts available under some of the fast depreciation schedules. With either program, seasonal skip payments are available if the contractor requires them.

The purchase of equipment under such a program has helped many contractors. The payment schedule is worked out in line with the contractor's projected income from jobs, and his working capital remains available to meet job requirements and improve his bonding position. The program also enables the contractor to keep his short-term money sources open to meet day-to-day operating expense; and he has the profit-building equipment needed for new work.

Poor financing plans

In buying equipment, contractors may find that the "cheapest" purchasing method turns out to be the most expensive and the least efficient.

Take, for example, a contractor who uses his working capital to pay cash on the barrel head for new equipment. To many contractors, working capital is the lifeblood of their business, and few have extra funds to pay cash for equipment without seriously hampering their reserves. Just as soon as working capital is pulled down to a minimum, the contractor has difficulty in making bond and may lose his ability to bid. He owns a new fleet of equipment, but cannot get and perform work.

To offset the situation, the contractor may turn to a local lending organization for working funds. Although the loan may be available to him, it is often for periods of 90 to 120 days, with the need to renew, if possible, at the end of each period. In addition, the total amount of such short-term borrowings show up as a current liability on his financial statement. This may serve to further reduce his bonding ability and bidding capacity. He has paid cash to buy equipment, but he has virtually put himself out of business.

If the contractor had used the installment program for buying equipment, he could have kept his working capital reasonably strong and been able to take on new work and do it profitably.

THE END

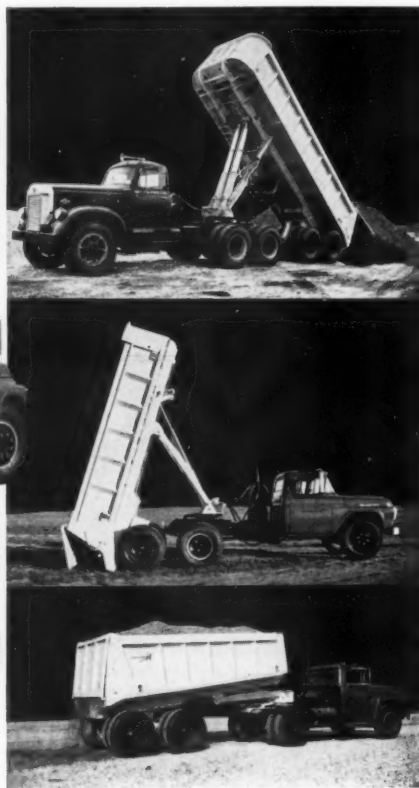


NEW DESIGN... reduces dead weight as much as 1000 pounds... provides higher dumping angle... utilizes twin hoists for greater stability. Write for brochure.

Dealer and Distributor inquiries are invited
THE LOADMASTER COMPANY
TELEPHONE 7-2984 P. O. BOX 4307 SHREVEPORT, LOUISIANA

PIONEERS IN DUMP TRAILER DEVELOPMENT

For more facts, use Request Card at page 18 and circle No. 436



WORLD'S CHAMPION EXCAVATOR Out-Digs Them All



DIXIE-DREDGE

With the ONLY Submerged Cutter-Drive

Compare your Yardage costs with this Machine—
LOWER Cost per Yard — **LOWER** Initial Cost — also moves
your dirt up to half a mile at no additional cost

NO trucking — **NO** spreading — **NO** compacting

SERVICE MACHINERY CORP.

Write for Bulletin 655 TODAY.

NORTH MIAMI, FLA.

For more facts, use Request Card at page 18 and circle No. 437

Names in the news

Donald W. Moss, group vice president of domestic operations for Raymond International Inc.



Raymond International elects four officers

A group vice president and three vice presidents have been elected by Raymond International Inc., New York, N. Y. Donald W. Moss, former vice president of domestic sales, has been promoted to the newly created post of group vice president of domestic operations.

Moss is succeeded in his former post by James P. Cummins, who was assistant vice president of domestic sales. Lindsey J. Phares is the new vice president in charge of domestic construction, and W. Harrell Rusk is vice president of overseas construction.

Division engineer named by Corps of Engineers

Brig. Gen. Robert G. MacDonnell is the new South Pacific division engineer for the U. S. Army Corps of Engineers. Gen. MacDonnell, who now makes his headquarters in San Francisco, succeeds Brig. Gen. William F. Cassidy, who will join the Eighth United States Army in Korea.

Gen. MacDonnell, formerly assistant commandant of The Engineer School, Fort Belvoir, Va., will be succeeded by Brig. Gen. John H. Dudley, commanding general of the 18th Engineer Brigade, Fort Leonard Wood, Mo. Col. Robert F. Seedlock will assume Gen. Dudley's former post.

Brig. Gen. William W. Lapsley, commanding officer of the Engineer Maintenance Center, Columbus, Ohio, has been named Ohio River division engineer, with Cincinnati headquarters. He will succeed Col. Rudolph E. Smyser, Jr., who is retiring from active service in July.

Col. Edmund M. Fry, now the Engineer, Southern Area Command, in Germany, U. S. Army Europe, will become district engineer at Rock Island, Ill., in September. He will succeed Col. John L. Wilson, Jr., who retires from active service in the latter part of August.

NACE appoints two

T. J. Hull has been named executive secretary of the National Association of Corrosion Engineers. Hull, who succeeds the retired A. B. Campbell, joined NACE six years ago as head of the central office. Prior to his recent appointment, Hull was technical secretary for the organization. Assisting Hull is R. W. Huff, Jr.

New York Trap Rock names vice president

John R. Kringel has been named vice president of the New York Trap Rock Corp., West Nyack, N. Y., succeeding Floyd J. Buffington, who retired. Kringel joined the firm four years ago as superintendent of its Haverstraw plant. In 1955 he was promoted to assistant to the vice president, and the following year to assistant vice president.

Seven honored by SAME

The Society of American Military Engineers has presented seven awards for military engineering achievement for 1957.

Lt. Gen. Raymond A. Wheeler (U. S.

Army, ret.) received the George W. Goethals Medal; Donald A. Rice, U. S. Coast and Geodetic Survey, Colbert Medal; Comdr. Richard A. Laughlin, Civil Engineer Corps, U. S. Navy, Moreell Medal; and Brig. Gen. William F. Cassidy, U. S. Army Corps of Engineers, Wheeler Medal.

Col. Edward C. Gill, Installations, U. S. Air Force, received the Newman Medal; Brig. Gen. John W. N. Schulz (U. S. Army, ret.), Society Gold Medal; and Comdr. Charles J. Meringer, Civil Engineer Corps, U. S. Navy, Toulmin Medal.

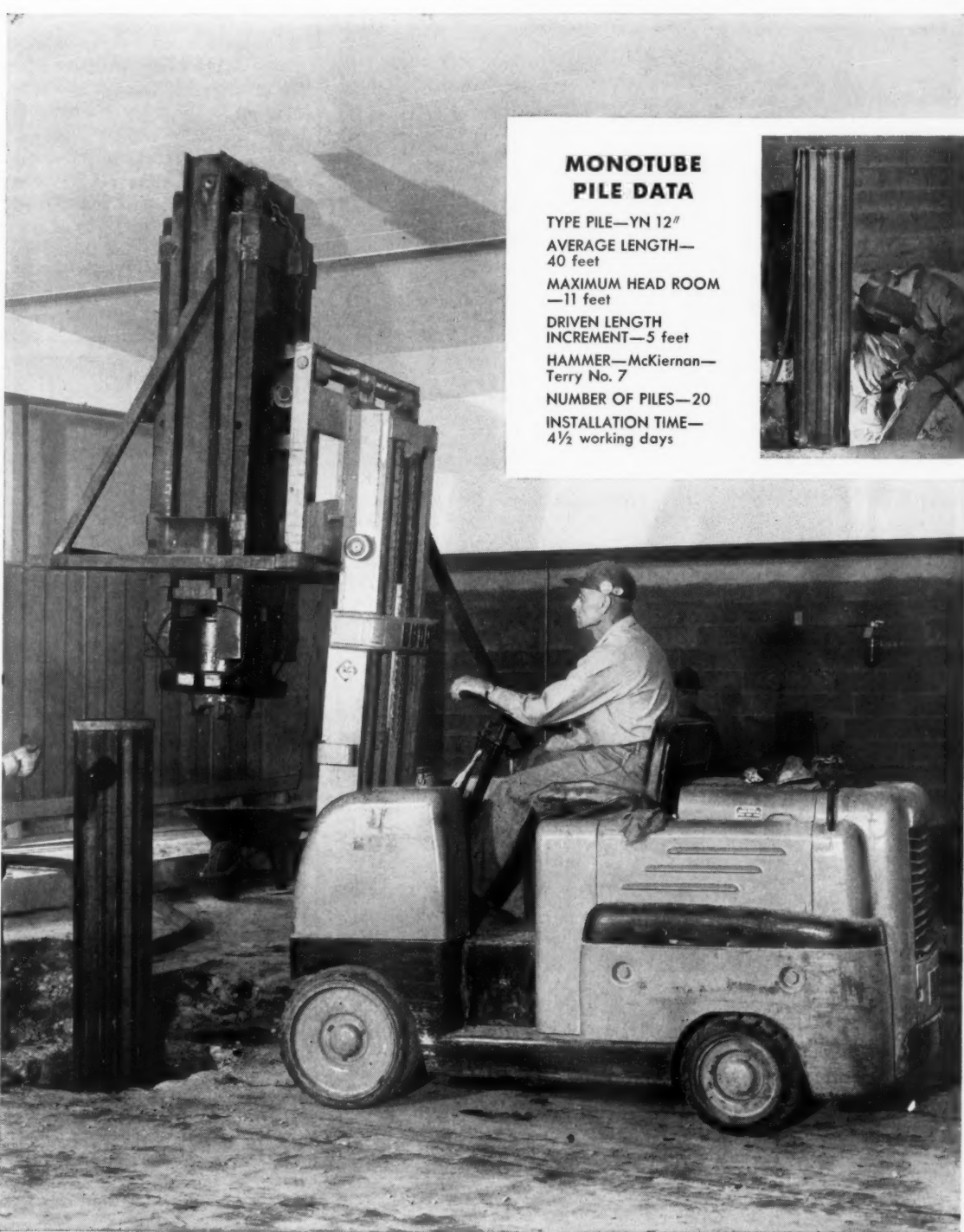
The awards were presented at the society's annual meeting held late last month, with the new president, Maj. Gen. Emerson C. Itchner, chief of engineers, U. S. Army, as presiding officer.

Wire-reinforcement group elects Planett president

Earl C. Planett, president and owner of the Planett Mfg. Co., Downey, Calif., has been elected president of the Wire Reinforcement Institute, Inc.

Ford P. Schusler, sales manager for the Industrial Division, Keystone Steel & Wire Co., Peoria, Ill., was named vice president. The elections were held at a recent annual meeting of this national trade association at Boca Raton, Fla.

The Wire Reinforcement Institute is a nonprofit organization, which conducts research, education, and promotion in the interest of steel fabric reinforced-concrete construction.



MONOTUBE PILE DATA

TYPE PILE—YN 12"
AVERAGE LENGTH—40 feet
MAXIMUM HEAD ROOM—11 feet
DRIVEN LENGTH INCREMENT—5 feet
HAMMER—McKiernan—Terry No. 7
NUMBER OF PILES—20
INSTALLATION TIME—4½ working days



ADAPTABILITY plus ECONOMY with Monotube piles . . . ideal for underpinning projects where conditions are difficult, and rapid job completion is important. Monotubes are easily cut to required lengths, easily handled, easily assembled and easily driven despite low head room.

Tapered, fluted Monotube piles are available in lengths, diameters and gauges to meet every requirement. Write The Union Metal Manufacturing Co., Canton 5, Ohio for complete information.

UNION METAL
Monotube Foundation Piles

For more facts, use Request Card at page 18 and circle No. 438



It's the PREHY

Grouter & Placer

(in the size and model to meet your job requirements.)

that affords BIG SAVINGS and a job well done.

★ ★ ★

A machine for every need—from the hand pump grouting-in of reinforcing rods to pneumatic placing of 3/4" aggregate mixes in forms.

For complete information:

RENTAL

SALES

KNOW-HOW

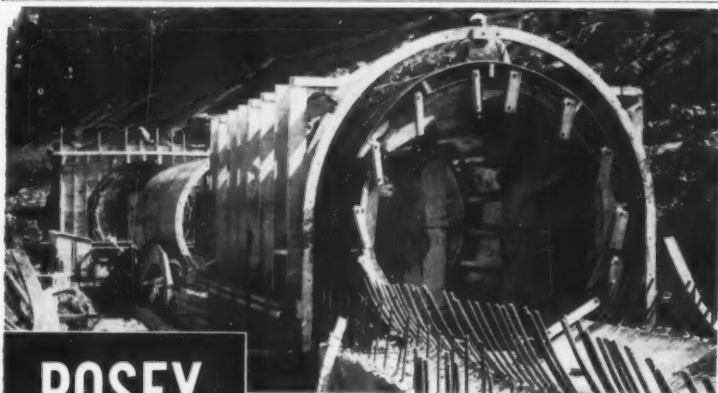
Nearest DISTRIBUTOR

PHONE: MU 3-5569 or write us direct.

PREHY COMPANY

420 Lexington Ave.
New York 17, N. Y.

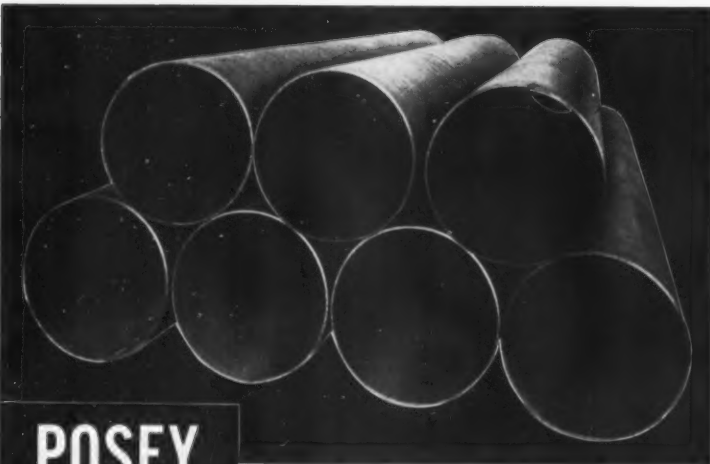
For more facts, use Request Card at page 18 and circle No. 439



POSEY STEEL FORMS

Telescoping and Non-Telescoping Forms for tunnels, sewers and conduits . . . Air Locks and Lock Doors for concrete bulkheads . . . Jumbos for drilling, timbering and concreting . . . Head Frames, Cages, Special Muck Cars, Muck Bins, and Self-Dumping Skips . . . Special Equipment for underground construction.

● TUNNEL AND MINE EQUIPMENT DIVISION



POSEY Large O.D. PIPE and PILING

For high pressure, high temperature water lines . . . for sewage outfall lines . . . for any job requiring fabricated steel pipe or piling of 14" O.D. or larger . . . Posey has the experience, facilities and skilled men to meet your requirements.

● STEEL PLATE DIVISION

Since 1910 . . . Posey has specialized in steel plate fabrication. Posey Iron has a wide background of engineering experience and know-how . . . and a reputation for delivering on time and within the budget. Let Posey Iron quote on your next job.

POSEY IRON WORKS, INC.

LANCASTER, PENNSYLVANIA
NEW YORK OFFICE: GRAYBAR BUILDING

For more facts, use Request Card at page 18 and circle No. 440

Surveying Washington

Anti-recession measures in the highway and housing fields already have been enacted, and the Senate indicates that it is still in a spending mood. The upper chamber approved, 60 to 26, a bill expanding the loan program of the Communities Facilities Administration. The legislation would increase federal loan authorizations for state and municipal public works from \$100 million to \$1 billion. It raises maximum loan maturities from 40 to 50 years, with interest rates being pegged at around a 3½ per cent maximum.

In addition, the bill makes communities of all sizes eligible for aid in constructing all types of public works. Under existing law, only towns under 10,000 in population are included in the program, and loans go almost exclusively for the building of water and sewer systems.

During floor debate an amendment was adopted which applies the provisions of the Davis-Bacon Act to public works initiated under the legislation. This act requires contractors and subcontractors on all federal contracts over \$2,000 to pay their workers wages

prevailing in the area of construction. Defeated was a proposed amendment to earmark half of all authorized loans for school construction.

School construction aid in so-called "federally impacted" areas was approved by the House. The bill passed would extend until June 30, 1961, the eight-year-old program of providing federal funds to build "minimum" school facilities in areas crowded by children of government workers or military personnel.

Impact aid, under the bill, would be extended indefinitely to areas in which the parents of the students both reside and work on federal property.

The House action flies in the face of administration recommendations that this type of school assistance be curtailed sharply and eventually limited to school districts where the students live on federal property.

An airport construction bill, shaped up by the Senate, would give a five-year extension to the Federal Airport Act, under which government con-



Bulk material haulers

WE TURN WHEELS...

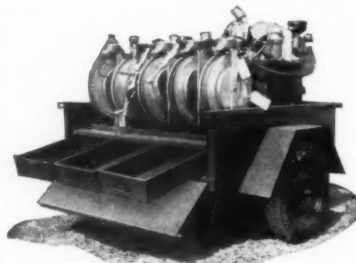
designing and building whatever type rubber-mounted field service equipment you need — mounted on the truck of your choice

TO KEEP YOUR WHEELS TURNING

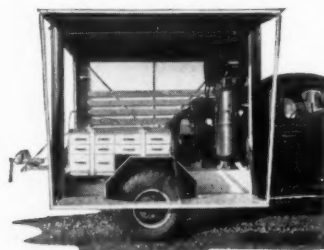
Use our engineering facilities, design know-how and experience to help meet your problems. Just pin this ad to your letterhead . . . we'll get in touch with you!



Special-purpose workshop



Small, two-wheel lubeunit



Medium-size work shop

CEMCO INDUSTRIES, Inc. GALION, OHIO

For more facts, use Request Card at page 18 and circle No. 441

CONTRACTORS AND ENGINEERS

by GEORGE RIVEIRE, JR.

struction funds are generally matched dollar for dollar by project sponsors. The legislation would also increase federal funds for the program from \$63 million to \$100 million annually and provide an additional \$75 million in discretionary funds for use in fiscal 1959.

New rivers and harbors legislation this year doesn't seem likely but can't be ruled out completely. President Eisenhower, in vetoing the \$1.6 billion measure, said he did so with "real regret". He explained that he just couldn't go along with 28 of the 150 projects listed because they would destroy "some of the most important governmental policies in the field of water resources". The turned-down projects carried a value of \$350 million.

The Chief Executive discounted the bill as an anti-recession device, saying it could be months—even years—before actual construction could be started on the newly authorized projects. There is already a \$5 billion backlog of approved public works, he added.

Nevertheless, the President urged Congress to prune out or modify the objectionable features in the omnibus bill and send him new legislation at once to save the many projects of genuine merit. Sen. William Knowland (R., Calif.), the Senate minority leader, immediately offered a bill in line with Eisenhower's suggestions, as did Rep. Russell Mack (R., Wash.).

But Senate majority leader Lyndon Johnson (D., Texas) wasn't enthusiastic about any scaled-down bill. He contested assertions that the bill the White House got was a "pork barrel" measure and said that the Knowland proposal represented a "buckling under" to administration pressure.

This year's highway bill managed to avoid the fate of the rivers and harbors measure, but it was a close call. The President, signing the bill at the last moment, said he had "serious misgivings" about its "grave defects". He finally decided to approve the measure because it does speed up Interstate System construction and may provide a quick employment stimulus. Further, he continued, the defects in

the bill are temporary. Had they been written in with the stamp of permanency, the legislation would have been returned to Congress for another try.

Eisenhower's main quarrel was the bill's departure from the traditional 50-50 federal-state matching formula on non-interstate construction. The section of the legislation in controversy authorized an extra \$400 million in ABC system funds in fiscal 1959, with the federal government's share of costs being boosted from half to two-thirds.

The Chief Executive thought the

billboard-control feature was on the weak side and could be made stronger in the future. But his principal objection here centered on the provision that incentive payments to the states to encourage advertising regulation along interstate routes must come out of general tax revenues instead of the Highway Trust Fund.

The President warned that these defects will have to be corrected when Congress again turns to highway legislation next year. Otherwise, it was indicated, there will be no White House approval.



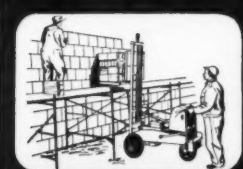
MODEL 15 A (flatbed)



MODEL 15 A (bucket)



MODEL M 30



MODEL L 10

PRIME-MOVERS OPERATE PROFITABLY ON MORE JOBS

than any other powered buggy. Outside or under roof, Model 15A PRIME-MOVERS put your materials where you want them. Little or no preparation required as these units use same runways, ramps or hoists you now have. Triple output of labor with same manpower. Regardless of the stage of your job, you can show immediate profit in placing concrete, brick or tile with PRIME-MOVERS.

PRIME-MOVER

PRIME-MOVER CO., Muscatine, Iowa

Please send job reports, estimating data and literature on PRIME-MOVER equipment for:

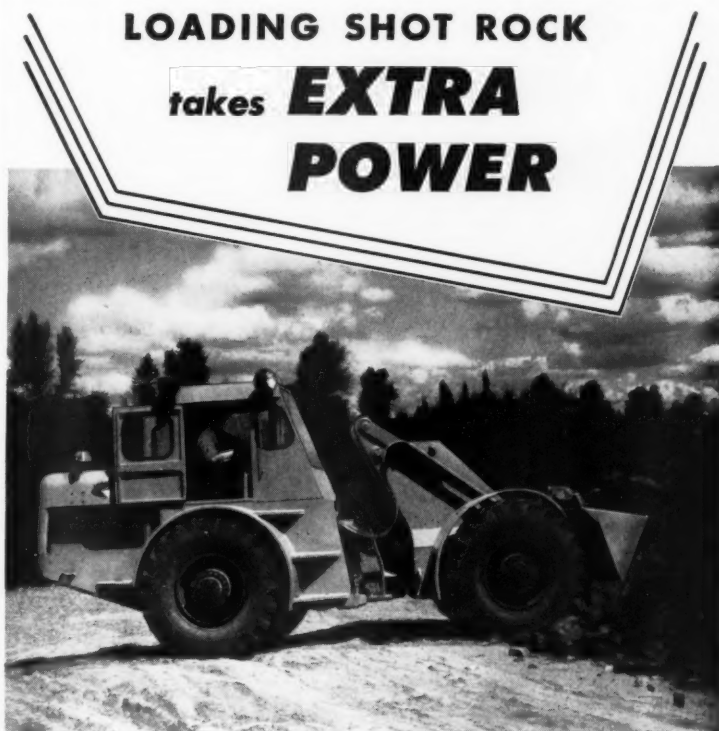
CONCRETE PLACING ☐ Model _____
BRICK HANDLING ☐ Model _____

Name _____

Company _____

Address _____

For more facts, use coupon, or Request Card at page 18 and circle No. 442



LOADING SHOT ROCK

takes **EXTRA POWER**



does it easily with

WAUKESHA Diesel

● Tough stuff to load—that shot rock! Takes a real loader with an engine that can pour on the power. With its Waukesha Diesel, and 100% breakout bucket action, this 1½ cu. yd. LD 5P Scoopmobile handles a lot of yardage for Bowman Sand & Gravel Co., Albany, Oregon—steadily, smoothly, quickly. Four-wheel planetary drive gives power to spare. Power steering, power shift forward and reverse transmission, and 4-wheel power brakes lighten the work of the operator. Waukesha Diesels also give you easy starting, quick warm-up, snappy acceleration, with high fuel economy and most economical upkeep.

372

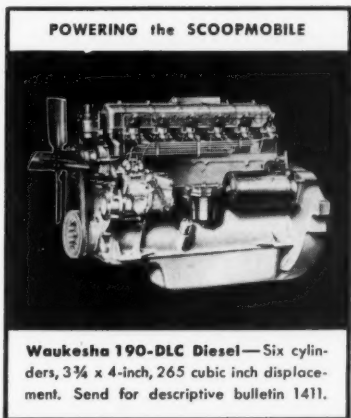
WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK

TULSA

LOS ANGELES

For more facts, use Request Card at page 18 and circle No. 443



Waukesha 190-DLC Diesel—Six cylinders, 3¼ x 4-inch, 265 cubic inch displacement. Send for descriptive bulletin 1411.

There would be no discussions of wage increases for Cleveland, Ohio, building tradesmen until satisfactory agreement was reached on a list of conditions for cutting unnecessary job costs, stated William J. Hunkin, vice president of the Cleveland Building Trades Employers' Association.

The contractors, urging the Cleveland Building Trades Council to endorse a nine-point policy which goes farther than the national code announced by AFL-CIO Building Trades Department President Richard Gray, maintained that "five of the nine

points merely involve a return to sensible working practices. The other four deal with clerical or jurisdictional matters."

Among the practices eliminated by the policy are show-up pay when men aren't able to work because of the weather, work restrictions and feather-bedding, travel time, non-working stewards, and coffee breaks.

Though other Chicago crafts were demanding substantial pay increases for 1958, Lathers Local 74 agreed to go along with last year's scale for

another year, and employers were asking Plasterers to do the same. The reason given was considerable unemployment and increasing competition from other crafts and materials.

The Lathers' new two-year agreement with the 46-member Employing Plasterers Association of Chicago continues the present \$3.70½ hourly rate into 1959. Also unchanged are fringe payments of 22½ cents an hour—10 cents for pensions, 7½ cents for health-welfare, and 5 cents for the Lathing Foundation for Promotional Activities. The agreement may

be opened for wage talks next year, with any increase effective June 1, 1959. Local 74 has about 1,200 members.

Other features of the settlement provide that there will be no limitations on the amount of work a lather may do in a day, and no restrictions on new types of tools or materials.

Teamster Union headquarters in Washington, D. C., reports that 63 of the union's locals either have had their trusteeships removed, or are in the process of gaining their autonomy. Six months ago the union reported that it had 104 locals under trusteeship, a situation that brought sharp criticism of the McClellan Committee and was made a big arguing point in the unsuccessful court action aimed at unseating Teamster President James R. Hoffa.

Meanwhile, it has been disclosed that the monitor board has hired the auditing firm of Price Waterhouse & Co. to conduct a check-up on the union's funds, estimated at \$40 million.

Even when unemployment is relatively high, there are shortages of skilled workers in the nation, says Deputy Under Secretary of Labor Millard Case. He attributes some of the responsibility for this to the building trades. Said Case:

"... For some years a number of building trades have rather consistently failed to train enough apprentices to offset losses of journeymen by death, disability, and retirement.

"This is especially true of carpenters, structural iron workers, painters, paper hangers, and glaziers. The imbalance between apprentices and journeymen losses is accentuated by the fact that apprenticeship completions must not only equal journeymen losses, but must exceed them by two per cent a year merely to keep pace with labor force growth. In addition, there are shortages of some types of skilled technicians."

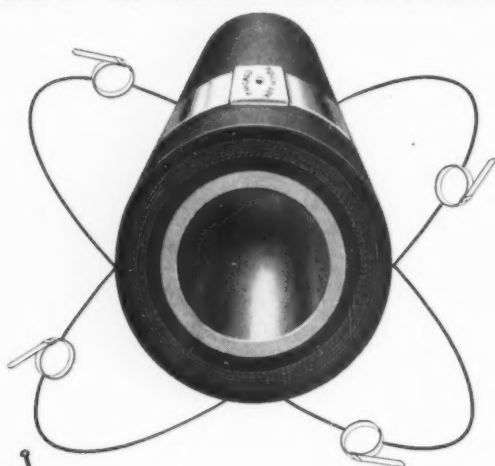
In the labor force of some 67,500,000, Case said, there are only about 15,000,000 skilled workers.

With the formal dedication of its impressive new headquarters building in Washington, D. C., the International Union of Operating Engineers began a new era under a new administration.

First indication of the union's "reform program" was a report that IUOE has adopted the AFL-CIO ethical practices codes. The reported adoption of the codes was accompanied by the resignation of Anton Imhahn, the union's second vice president. Leo Bacinski, University City, Mo., will take over the vacancy left by the 70-year-old Imhahn, prominently mentioned in the McClellan Committee charges against the union.

The union is now headed by Joseph J. Delaney.

IN ORBIT for a LIFETIME!



PUNCH-LOK Hose Clamps

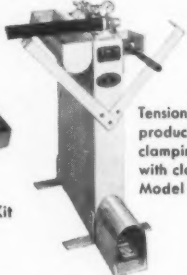
MR. LOK SAYS:
When a Punch-Lok clamp goes into orbit around a hose connection it's there to stay.

DOC PUNCH SAYS:
Tell the hose user it's a life-saver prescription for outer-space too.
NO SNAG! NO LEAKS!

NEW! from PUNCH-LOK



New K-45 Clamp-Master Kit now in all-steel carrying case finished in red baked-on enamel.



Tension-Air production hose clamping machine with clamp remover Model TA-1.

See your nearby Punch-Lok Distributor



PUNCH-LOK Company

Dept. J, 321 N. Justine Street, Chicago 7, Illinois

For more facts, circle No. 444

Keep Cool, mister! with

ARCTIC BOY

portable water coolers



- Rugged Construction ... good everywhere men work!
- Galvanized inset, hot dipped after forming for flaw-free finish!
- Large top opening, easy to ice, fill and clean.
- Send for complete information and booklet "Care and Use of Your Cooler." Write Dept. C-25.



THE SCHLUETER MFG. CO. • ST. LOUIS 7, MO.

For more facts, circle No. 445

BUY NOW AT TREMENDOUS SAVINGS!



Save up to \$3,000 on an unused Army 6x6 ... guaranteed new-truck performance. **Rugged Front-Wheel Drive** ... gives extra power when the going gets tough! **Tandem Rear Axle** ... carries heaviest loads over roughest terrain on "off-road" jobs. **Delivered On Approval!**

For Specifications, prices, delivery write, wire or phone collect: JACKSON 5-7841 MILTON Y. TOOMBS, JR., Sales Manager.

MEMPHIS EQUIPMENT Company
ARMY TRUCKS • PARTS
CONSTRUCTION EQUIPMENT
746 SO. THIRD STREET • MEMPHIS, TENNESSEE

For more facts, circle No. 446

year,
me 1,
mem-

ment
mita-
rather
ctions
als.

rs in
63 of
had
are in
uton-
n re-
under
ought
lellan
argu-
court
mster

closed
ed the
use &
n the
0 mil-

rela-
ges of
, says
Labor
me of
o the

ber of
onsist-
ppren-
men by
nt.

arpen-
inters,
he im-
s and
ted by
com-
urney-
nem by
o keep
In ad-
some

7,500,-
about

of its
uilding
nterna-
gineers
ew ad-

a's "re-
t that
O ethi-
ported
accom-
Anton
ce pres-
y City,
ncy left
promi-
Clellan
e union.
Joseph

GINEERS



A
tor
vest
Div
T
reve
ope
tha
ent
whi
of-
and
for
Rev
obt
com
S
in
8.4
pov
wit
27,

PRODUCT PARADE

For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.

New loader has 2,500-pound carrying capacity



The Frank G. Hough Co. announces an entirely new Payloader model, the H-25. The unit is said to be the first rubber-tire front-end loader with a rated carrying capacity of 2,500 pounds.

The large-diameter hydraulic brakes have an automatic adjustment, and are sealed against dust, dirt, and solid foreign material. An access panel at the front of the machine makes it easy to service and inspect the master brake cylinder, the company points out.

Although the H-25 has more capacity and is larger and heavier, it can be operated in and out of box-cars having 6-foot doors, according to the manufacturer. Its turning radius is 6 feet to the outside rear hub, and the maximum dumping height clearance is 5 feet 4½ inches. Power steering as a standard feature increases maneuverability.

A new power-shift transmission and new torque converter are matched to provide the maximum in speed of movement and ease of operation. The power-shift transmission is full-reversing and has two speeds.

Another feature of the new Payloader's power train is the power-transfer differential, which automatically transfers more torque to the drive wheel with the best footing when slippage is encountered.

For handling of dense, compacted materials, the H-25 has a breakout force of 4,500 pounds and—like other Payloaders—provides a bucket tip-back of 40 degrees at ground level.

For further information write to The Frank G. Hough Co., Dept. C&E, 762 Seventh Ave., Libertyville, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 178.

134-hp tractor features single-stick control

A new 134-hp diesel crawler tractor is offered by International Harvester Co.'s Construction Equipment Division.

The unit features a 6-speed full reverse transmission, which provides operators with a single-stick control that can be used to shift through the entire speed range. A "shuttle-bar", which can be operated with a sweep-of-the-arm motion, makes it simple and easy to move the tractor in either forward or reverse gear in any range. Reverse speeds up to 8.4 mph are obtainable to cut dozing time, the company reports.

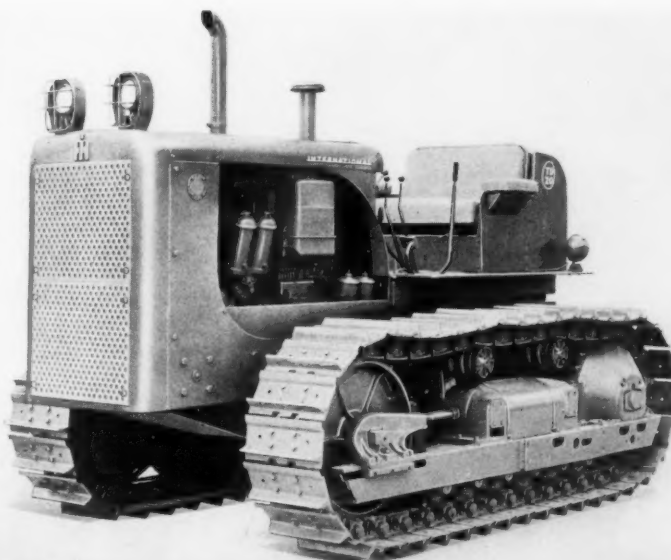
Speeds range from 1.5 to 7 mph in forward range, and from 1.8 to 8.4 mph in reverse. Drawbar horsepower on this model is rated at 111, with a maximum drawbar pull of 27,500 pounds in first gear at 1.5 mph.

A newly designed universal joint connecting the clutch shaft to the transmission drive shaft automatically corrects for any power train misalignment through usage, and reportedly provides greater clutch and transmission life.

According to the manufacturer, the TD-20 can operate at up to a 45-degree angle with positive lubrication to all engine working parts. The 74-inch-gage tractor has an operating weight of 29,300 pounds.

A full line of matching attachments is available.

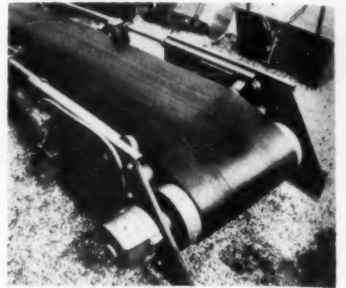
For further information write to the International Harvester Co., Construction Equipment Division, Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 177.





A double-action screed that attaches easily and quickly to the back of any standard dump truck is available from the Browning Mfg Co. This unit can be used for asphaltic concrete, pre-mix, caliche base, gravel, and other materials. Double action reportedly provides a highly compact uniform layer. For further information about this screed, write to the Browning Mfg. Co., Dept. C&E, P. O. Box 2702, San Antonio, Texas, or use the Request Card at page 18. Circle No. 31.

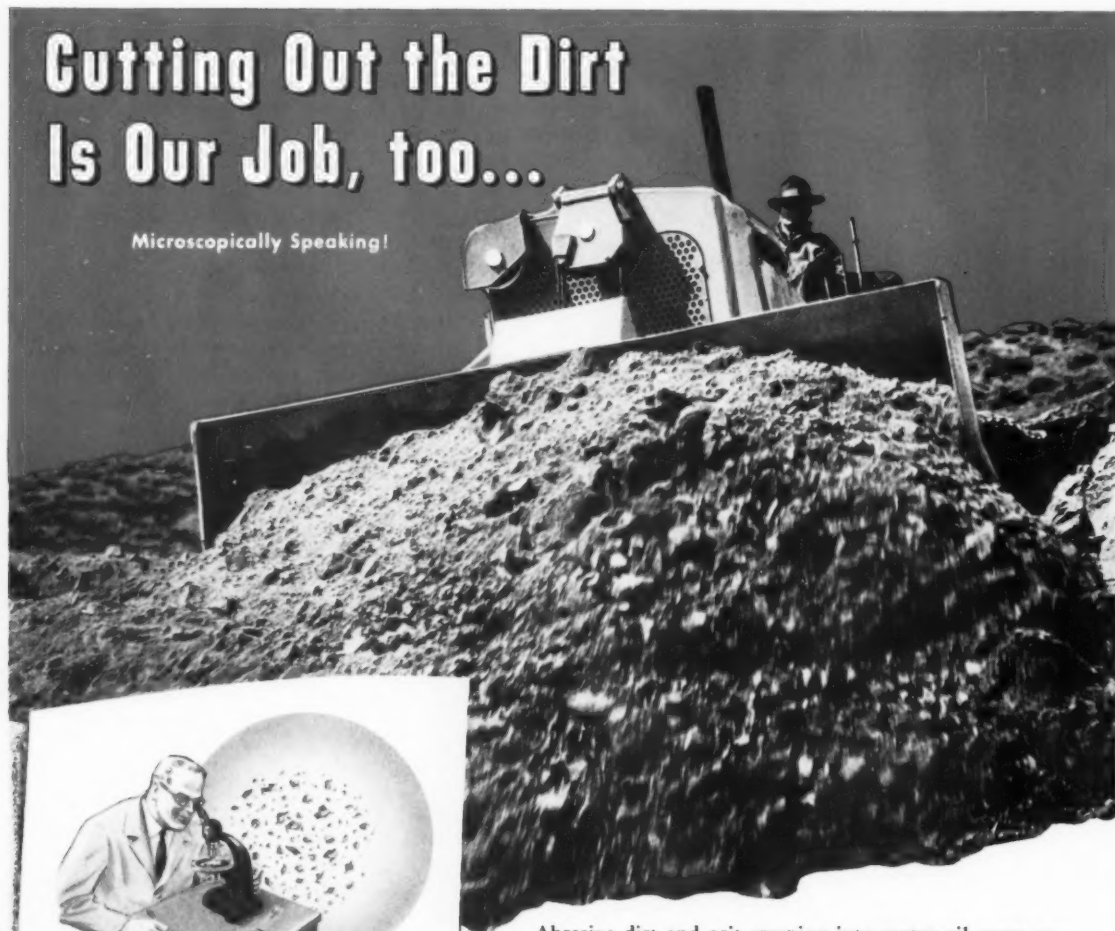
To obtain further information on any of the products described in this section, circle the number given at the end of the item on the Request Card at page 18.



V-belt drives are eliminated by the Bauer self-driven head pulley. Motor, gears, and all moving parts are contained within the pulley drum.

Cutting Out the Dirt Is Our Job, too...

Microscopically Speaking!



R

*Prescription
Filtration*



There's a specific WIX Cartridge engineered for every engine in construction service... gasoline or Diesel—mobile or stationary—for lube, air and fuel.



CATERPILLAR
INTERNATIONAL
ALLIS CHALMERS
DETROIT DIESEL
LE TOURNEAU
MURPHY

and ALL OTHER
Construction Equipment!

Abrasive dirt and grit creeping into motor oil cause engine failures that sideline construction equipment. But, WIX Lube, Air and Fuel Filter Cartridges keep your engines clean all the time!—don't give these contaminants a chance to get in their dirty work. Follow the practice of thousands of WIX-wise contractors and install WIX Hevi-Duty Cartridges in ALL your filters. It pays off in better, trouble-free lubrication and helps keep your equipment on-the-job.

WIX will make a FREE Filter Survey for you, listing all your engines and showing the correct lube and fuel filter Cartridge replacements you require. Also, deliver a reserve supply of these Cartridges to your local WIX Wholesaler—one near-by source of supply for prompt, COMPLETE Oil Filter Service at your job-sites—no heavy inventory for you. Ask your jobber, or write us direct—TODAY!



WIX CORPORATION • GASTONIA, N. C.
In Canada: Wix Corporation Ltd., Toronto

For more facts, use Request Card at page 18 and circle No. 447

Self-driven head pulley eliminates V-belt drive

A German-built single-unit conveyor drive that incorporates the motor, gears, and all moving parts within the head pulley drum is available from the George von Opel Corp.

The Bauer self-driven head pulley eliminates overhead V-belt drives, minimizes maintenance, and is simply installed. Safety is another feature, the manufacturer points out, since chains, sprockets, and other like parts are not exposed.

The unit comes in standard widths, and reportedly has found wide European use in every type of materials-handling operation.

Bauer pulleys are activated by 3-phase induction motors with high starting torque and low starting current, ranging from 0.15 to 15 mph.

For further information write to George von Opel Corp., Dept. C&E, 15 William St., New York 5, N. Y., or use the Request Card at page 18. Circle No. 133.

FOUNDATION
CONSTRUCTION

CAISSONS

DRILLED AND
UNDERREAMED

PIERS

SPECIAL
DRILLING
PROBLEMS

Offices in Atlanta, Ga.,
Pittsburgh, Pa.,
Washington, D.C.,
Cleveland, Ohio

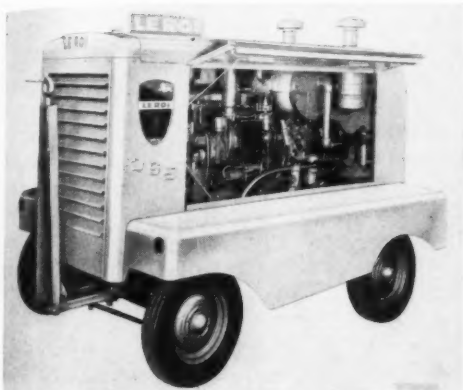
Wire or phone for a quotation
on your next foundation job—
ANYWHERE IN THE WORLD

McKINNEY
DRILLING COMPANY

NACOGDOCHES, TEXAS
Ph.: LOgan 4-8373 • P. O. Box 190

For more facts, circle No. 448

CONTRACTORS AND ENGINEERS



Rotary air compressor is rated at 365 cfm

A 365-cfm rotary air compressor with an air-compressor speed of only 1,100 rpm is announced by the Le Roi Division of the Westinghouse Air Brake Co.

Designated Model 365RD2, the unit is a portable, two-stage oil-cooled sliding-vane type, rated at 365 cfm of free air compressed to 100 psi.

The compressor is coupled to a GM 471 diesel engine with a hydraulically actuated clutch. Engine speed at the rated output of the compressor is 1,650 rpm. According to the manufacturer, a full-capacity control matches air supply to air demand within a pressure range of 10 psi.

The engine-compressor is supported on a unit-welded steel frame, and is enclosed in a heavy steel housing. Three-point suspension protects against damage from towing over rough terrain.

Dry weight of the 365RD2 is 7,010 pounds. The unit is 10 feet 5 inches long, 6 feet 8 inches wide, and 7 feet 4 inches high. Automotive-type steering, tapered roller wheel bearings, and 6.50x16, 8-ply tires are standard equipment.

For further information write to the Le Roi Division, Westinghouse Air Brake Co., Dept. C&E, 3716 W. Wisconsin Ave., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 111.

New 210-hp truck diesel weighs only 1,710 pounds

A 210-hp diesel engine that weighs only 1,710 pounds is announced by the Detroit Diesel Engine Division of the General Motors Corp. Its lighter weight reportedly is attained through use of aluminum alloys in the cylinder block and other major components.

The engine, a 6-cylinder model, is the latest addition to the Division's new line of 71-E truck engines.

The new unit develops its peak horsepower at 2,100 rpm, with its maximum torque of 577 pound-feet occurring at 1,200 rpm. According to the manufacturer, it can provide higher average road speeds under practically all highway conditions.

For further information write to the Detroit Diesel Engine Division, General Motors Corp., Dept. C&E, 13400 W. Outer Drive, Detroit 28, Mich., or use the Request Card at page 18. Circle No. 52.

At 365 cfm of free air compressed to 100 psi, compressor speed on this Le Roi 365RD2 is only 1,100 rpm, and engine speed 1,650 rpm.

Self-priming pumps rated at 12,000, 18,000 gph

Larger-capacity, self-priming centrifugal pumps are announced by the Midland Pump Division of the Midland Products Co.

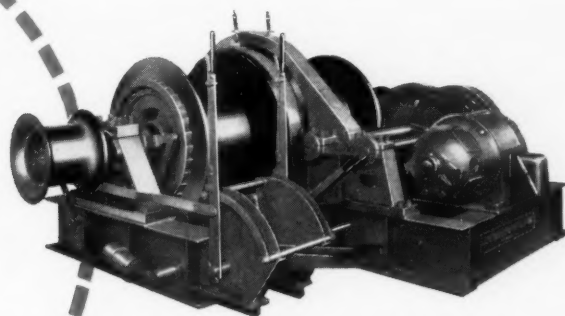
These new 2-inch and 3-inch pumps have ratings of 12,000 and 18,000 gph, and are available with 6-hp Wisconsin, Briggs & Stratton, or Clinton engines. They are mounted on two rubber-tire wheels, and incorporate the same principle of priming as the firm's 5M and 7M models.

For further information write to the Midland Pump Division, Midland Products Co., Dept. C&E, 181 Green-



wood Ave., Midland Park, N. J., or use the Request Card at page 18. Circle No. 19.

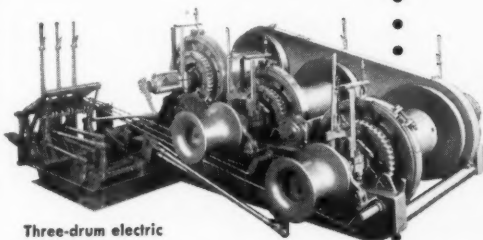
Special purpose HOISTS... backed by very special EXPERIENCE



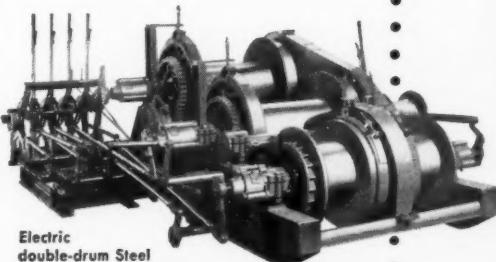
Double-drum electric winch for handling anchor lines



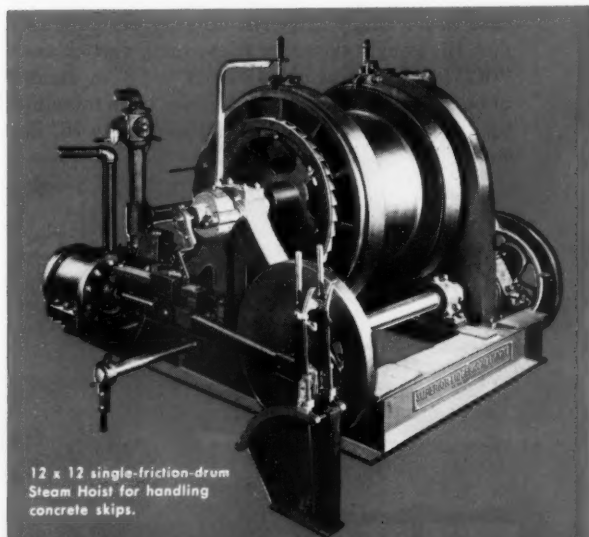
When you need hoisting or hauling equipment of any kind...for any purpose...always specify Lidgerwood. Behind the Lidgerwood name stand many years of experience and the construction of many thousands of hoists. Let us put this vast experience to work for you the next time you have a hoisting or hauling problem.



Three-drum electric hoist for blast furnace erection work



Electric double-drum Steel Erection Hoist with two vang drums and clutched winchhead



12 x 12 single-friction-drum Steam Hoist for handling concrete skips.

Designers and Builders of Mine, Shaft, Incline, Standard Contractor's and Special Hoists of every description; Cargullers; Steam, Electric and Gas Marine Deck Auxiliary Machinery.

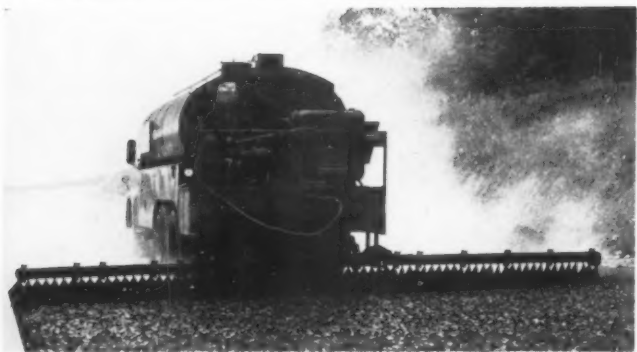
WRITE FOR BULLETINS AND CATALOGS

Superior—Lidgerwood—Mundy Corporation

MAIN OFFICE AND WORKS — SUPERIOR, WISCONSIN

NEW YORK OFFICE — 7 Dey St., New York 7, N. Y.

For more facts, use Request Card at page 18 and circle No. 449



This bituminous distributor, shown shooting Penn BM-1 at 1.75 gallons per square yard on the Pennsylvania Turnpike Extension at Scranton, is a 2,700-gallon-capacity Littleford Spray Master. The unit, owned by the Interstate Asphalt Co., of Quakertown, Pa., is equipped with a 24-foot circulating spraybar. Featured on this Spray Master is single lever control, an easily operated capstan-type flywheel giving fast, accurate driver control. For further information write to Littleford Bros., Inc., Dept. C&E, 457 E. Pearl St., Cincinnati 2, Ohio, or use the Request Card at page 18. Circle No. 15.

here's
a powerful
combination!

**HIGHWAY'S
HEAVY-DUTY
"HC" DIGGER...**

mounted on a
"BLUE OX"

Rugged, powerful digging operation in any type of soil

The Highway HC earth-boring machine can be easily mounted on the "Blue Ox" vehicle or heavy-duty trucks. The compact unit connects to the transfer case with a single drive shaft. Easily available controls allow one-man operation. Highway's exclusive telescoping derrick enables 75' poles to be set. The "HC" machine digs holes from 9" to 36" in diameter, 10' deep. Overall height of both vehicle and derrick is under 10' in traveling position. Write to Highway for further information on this Heavy-Duty HC Earth-Boring Machine, and on the other models available.



UTILITY DIVISION
HIGHWAY TRAILER COMPANY

HEADQUARTERS: EDGERTON, WISCONSIN
Manufacturers of: Public Utility Bodies • Earth-Boring Machines • Pole and Cable Reel Trailers • Winches
Power Take-offs • Service Accessories • Commercial Trailers • Trailerized Tanks and Dry-Bulk Haulers
SALES AND SERVICE IN PRINCIPAL CITIES

For more facts, use Request Card at page 18 and circle No. 451



**Barricade safety light
runs up to 1,500 hours**

The U-C-Lite Mfg. Co. announces its Big Beam barricade safety light, designated Transista Flash Model 410T. According to the manufacturer, the new unit uses a modern transistor circuit to lengthen battery life and produce approximately 1,500 continuous-operation hours from two standard 6-volt lantern batteries.

Special weatherproofing is featured, through a dipping application to the flashing mechanism and a hinged, telescoping top to prevent water entering the battery case. An acidproof plastic liner in the container prevents corroding of the interior by acid from dead batteries.

The two-directional flashing head is white-enameled on the inside to increase brilliance and visibility. A tamperproof concealed switch can be turned on or off from the outside of the case. The unit's lamp is available with a choice of either red or amber optical plastic lens.

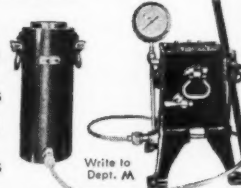
For further information write to the U-C-Lite Mfg. Co., Dept. C&E, 1050 W. Hubbard St., Chicago 22, Ill., or use the Request Card at page 18. Circle No. 26.

**DUDGEON
HYDRAULIC
JACKS**

**SALES
RENTALS**

CAPACITY
TO
600 TONS

FOR:
PILE
TESTING
•
UNDER-
PINNING
•
BRIDGES
•
PIPE
PUSHING



DESIGNERS and
MANUFACTURERS OF
Hydraulic Units
For Special
Applications

**RICHARD
DUDGEON INC.** EST. 1850

789 BERGEN STREET BROOKLYN, N. Y.
• ST 9-4040 •

For more facts, circle No. 452

CONTRACTORS AND ENGINEERS

Compactor wheels extend tractor-dozers work range

The Construction Machinery Division of Clark Equipment Co. offers open-face steel compactor wheels as standard attachments for the Michigan Model 180 tractor-dozers.

The quick-change attachments replace the rubber-tire wheels; no other modification is necessary. With the dozer blade ahead of the compactor wheels, the unit can spread material as it compacts, eliminating one dozer on the fill, the company points out.

The 60-inch-diameter wheels are 22 inches wide on the front axle, 26 inches wide on the rear, and reportedly develop 810 pounds of com-

pression per inch of roll face. With fenders, the machine weighs 36,000 pounds.

The compactor wheels are said to develop at least 95 per cent Proctor in two passes when working in earth suitable for road construction. Best speed for optimum compaction reportedly is between 3 and 4 mph, although the unit can do 10 mph.

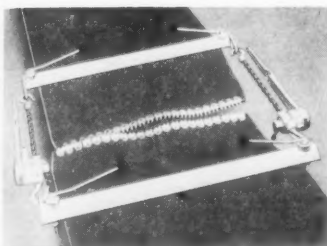
For further information write to the Construction Machinery Division, Clark Equipment Co., Dept. C&E, P. O. Box 599, Benton Harbor, Mich., or use the Request Card at page 18. Circle No. 2.



With its new quick-change steel compactor wheels, the Michigan Model 180 can be pulled off spreading or dozing and put to work compacting.

Clamp eases installation of long conveyor belts

The Flexible Steel Lacing Co. announces its LS-3 Far-Pul belt clamp—a heavy-duty clamp specially designed for long high-tension conveyor-belt installations. The unit is recommended for belts 30 to 36 inches wide.



The new clamp is of all-steel construction, consisting of two pairs of clamping bars, one pair for each belt end.

For further information write to the Flexible Steel Lacing Co., Dept. C&E, 4608 Lexington St., Chicago 44, Ill., or use the Request Card at page 18. Circle No. 148.



SIMPLICITY'S
basically different design can mean much to you in the Road Building "Rat Race".

Shown above is the Simplicity diesel powered S-200 plant of Windsor Service, Inc., Palmyra, Pa., equipped with 8,000 lb. capacity fully automatic weighing, batching and mixing equipment.

Here are some of the basic differences in Simplicity asphalt plants:

- **DOUBLE SHELL DRYER**
Dependable, Durable and Economical.
- **HOT OR COLD MIX**
Two Furnaces on One Double Shell Dryer.
- **DOUBLE ZONE MIXER**
Faster and More Thorough Mixing.
- **FOUR TON MIXER**
Properly Designed, Not An Overloaded 3-Ton.
- **FULLY AUTOMATIC BATCHING AND MIXING**
Faster, Accurate, Dependable.
- **ASPHALT PLANT AIR WASHER**
Protects Men, Machinery and Neighbors.
- **TUBULAR ERECTION COLUMNS**
Erection Time and Vibration Reduced.
- **HOT SPOT ASPHALT TANK**
Asphalt Hot—Quicker and Cheaper.

● **Lowest price, highest quality--sales price below 50c per pound.**

THERE'S A SIMPLICITY PLANT NEAR YOU

On request, we'll be glad to send you the name and location of a nearby installation, or, better still, come to see us.

DEPENDABLE
THE SIMPLICITY SYSTEM
THE SIMPLICITY SYSTEM CO.
RIVERSIDE DRIVE • PHONE MADISON 2-2144
FROM BUILDER TO BUYER
BETWEEN MEN WHO KNOW
CHATTANOOGA 6, TENNESSEE

For more facts, use Request Card at page 18 and circle No. 454

FAST - PROFITABLE DIGGING! STERLING

HYDRAULIC CONTROL EARTH BORING MACHINES

Precision Engineered —
Rugged-Dependable
Tested Thru Years of
Service by Power and Light
Companies, Telephone
Companies and Guard Rail-
Fencing Contractors
Digs The Hole!
Sets The Pole!
Models To Fit Every
Digging Need.

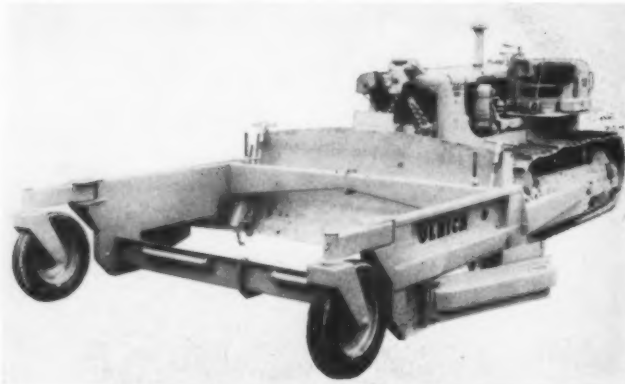
Model A shown below



**WYOMING VALLEY
EQUIPMENT DIVISION**

714 Wyoming Ave., Kingston, Pa.
Telephone: BUTLER 7-3158

For more facts, circle No. 453



The Model S-16 aggregate base spreader features use of the dozer blade as the strike-off. Truck push rollers are located on the front cross-member for contact with the wheels of dumping trucks.

Spreader uses dozer blade for strike-off

A new base and aggregate spreader for use with Caterpillar track-type tractors is announced by the Ulrich Mfg. Co.

Designated Model S-16 Dozer-Spreader, the new tool can be installed on any D6, D7, or D8 equipped with a straight or angling bulldozer. Principle feature of the new spreader

is its use of the dozer blade as the strike-off.

The spreader push arms are fastened on the dozer push arms. Two large clamps, easily disconnected, attach the hopper to the dozer blade. No dozer parts are removed to install the spreader.

The 12-foot-wide hopper is said to permit quick, easy positioning and dumping of the largest trucks.

According to the manufacturer, the S-16 can handle any spreadable material. Hinged wings on each side of the hopper are adjusted to obtain spreading widths ranging from 10 to 16 feet. The spreading depth can be easily adjusted from 1 to 22 inches.

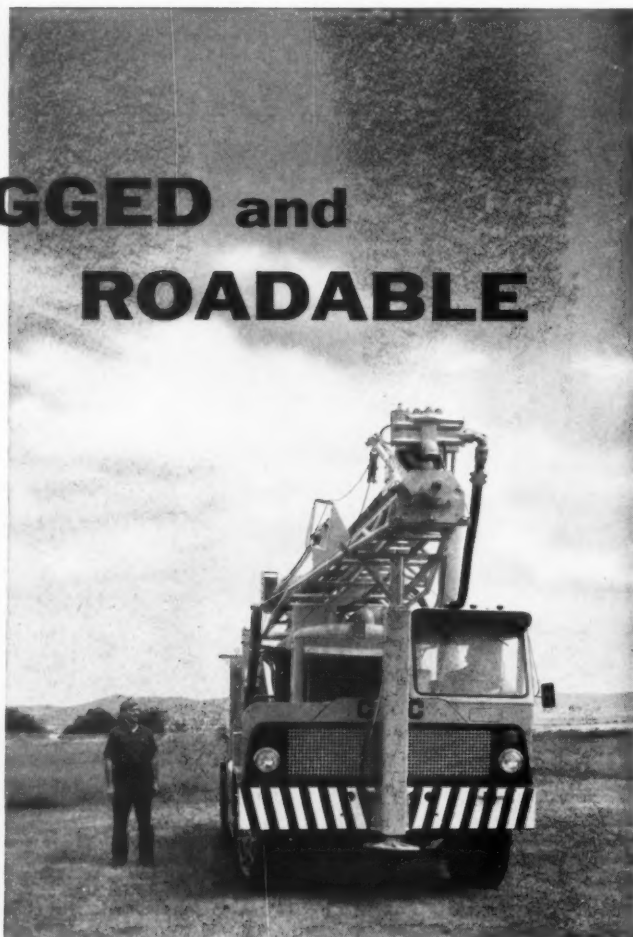
For further information write to the Ulrich Mfg. Co., Dept. C&E, 1042 W. Grand, Roanoke, Ill., or use the Request Card at page 18. Circle No. 144.

New transit-mix plant features easy erection

A new transit-mix plant designed for easy erection, high capacity, and convenient operation is announced by the C. S. Johnson Co.

Designated Jumbo, the plant has a 3-compartment aggregate bin with a capacity of 105 cubic yards. Cement is held in a 110-barrel overhead tank. The top openings of the aggregate-bin compartments are large and are assembled in an in-line arrangement, so that they are easily charged by a clamshell crane. The bin shell is of all-welded construction, and comes in sections that are simple to put together, the manufacturer claims.

The Jumbo uses a 6-cubic-yard



MORE RUGGED and ROADABLE

NEW TRUCK-MOUNTED DRILLMASTER

Speeds Contract Drilling two ways

On The Job...

The new truck-mounted Drillmaster gives you the proved performance and versatility that have made contract drillers acclaim it as the most productive blast-hole unit ever developed.

You can set up and be ready to drill in a matter of minutes. Tower is raised and leveled effortlessly by hydraulic power. With the I-R revolutionary down-the-hole drill you can drill from 70' up to 350' or more of 4 1/4" to 6 1/2" blast holes per shift. And for soft non-abrasive over-burden and bed rock, use it as a heavy-duty rotary drill.

New "beefed-up" mounting means higher performance than ever before obtainable in a truck unit. Air power for all drilling functions is provided by a 600-cfm Gyro-Flo rotary compressor—known the world over for smooth-running performance, year-round dependability and exceptional freedom from maintenance and attention.

and On The Highway

This improved "TRUCM" mounting features a completely new mobile unit especially designed to I-R heavy-duty specifications by Crane Carrier Corp.—leading maker of specialized carriers. It can go anywhere at sustained highway speeds—meets legal requirements in all 48 States.

Here are the specifications, on the road ready to go:

Length ... 34' 11"	Weight ... 34,000 lb.
Height ... 12' 6"	Wheel Base ... 175"
Width ... 8'	Compressor Fuel Capacity ... 200 gal.

Ask your Ingersoll-Rand representative for complete information on this new truck-mounted Drillmaster—the most rugged and roadable unit you've ever seen.



Ingersoll-Rand
5-735 11 Broadway, New York 4, N.Y.

A CONSTANT STANDARD OF QUALITY IN EVERYTHING YOU NEED FOR DRILLING ROCK
For more facts, use Request Card at page 18 and circle No. 455

LOW COST—LIGHT WEIGHT ONE MAN OPERATED PREWITT DRY BORE HORIZONTAL AUGER DRILL



DRILLS 2 1/2" to 20" DIAMETER—50' to 100' LONG—Cut labor, overhead and maintenance cost with the amazing new Prewitt Horizontal Auger Drill. Requires ground opening of only 4' x 10'—easily operated by one man. Light weight unit can be lowered in operating position by back hoe. Unit is self contained... requires no air compressor, generator, or water. Eight auger sizes are available from 2 1/2" to 20" in diameter. Drills holes from 50' to 100' long... holds straight line. Easily reversed for retracting augers.

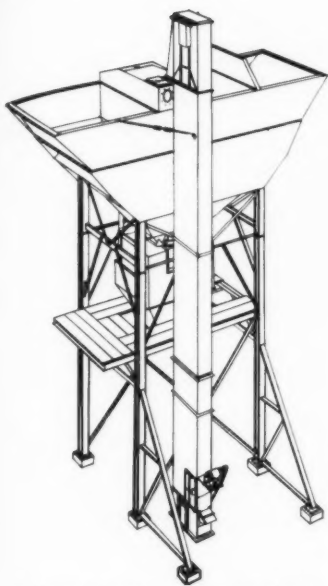
J.R. PREWITT AND SONS, INC.
Manufacturers Since 1929

DEALER INQUIRIES INVITED
Write, wire or phone for complete information

J. R. PREWITT & SONS
Pleasant Hill, Mo. Dept. 504, Phone 40

For more facts, circle No. 456

CONTRACTORS AND ENGINEERS



Johnson's Jumbo transit-mix plant.

manual Johnson Hi-Speed concentric batcher, with a completely independent cement hopper and scale. The batcher has three 12,000-pound weigh beams for aggregates, and one 5,000-pound weigh beam for cement. Separate cement and aggregate discharge levers assure controlled discharge.

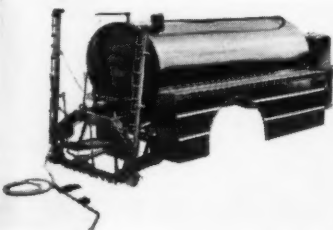
An attached 275-barrel-per-hour cement elevator has 14 x 8-inch buckets. A 3/4-hp air compressor supplies air for cement aeration through built-in fittings.

For further information write to the C. S. Johnson Co., subsidiary of the Koehring Co., Dept. C&E, P. O. Box 71, Champaign, Ill., or use the card at page 18. Circle No. 17.

New asphalt distributors deliver up to 350 gpm

Two new asphalt distributors designed for truck mounting are offered by the W. E. Grace Mfg. Co.

Designated Models 341T and 351T, the units have a capacity of 1,000 and 1,250 gallons, respectively, and are available with a circulating spraybar up to 24 feet in length. A 4-inch asphalt pump mounted on the spraybar, and close to the bottom of the tank, reportedly delivers up to 350 gpm.



Power is supplied by a Ford 38-hp, 4-cylinder tractor engine, with starter and 4-speed transmission.

Some of the features included as standard equipment on both models are glass-wool insulation, swing-up shifting spraybar, tank gage, thermometer, hand-spray attachment, and instant generating diesel-fuel-burning burners.

For further information write to the W. E. Grace Mfg. Co., Dept. C&E, 6003 S. Lamar St., Dallas, Texas, or use the Request Card at page 18. Circle No. 43.

Holding back a mountain is a job that highway guardrails are rarely called upon to perform, but this U. S. Steel-designed highway guard withstood an estimated 3,000-ton rock slide without breaking. Huge boulders, some half as large as an automobile, buried Highway 40 east of Salt Lake City and upset some of the concrete posts of the guardrails, but left the 3/4-inch steel strand undamaged. For further information about these guardrails, write to the United States Steel Corp., Dept. C&E, 71 Broadway, New York 6, N. Y., or use the Request Card at page 18. Circle No. 62.



The A-W Hydraulic Crane... most versatile piece of equipment

according to D. R. Smalley & Sons, Inc., Celina, Ohio

D. R. Smalley & Sons, Inc., is a major Ohio road and excavating contractor. The company is now engaged in relocating a section of U. S. 40 north of Dayton. The project, entailing 1,400,000 yards of cut and fill and 20 miles of 2-lane pavement, is estimated to cost \$4,800,000.

Francis Smalley tells us: "In 1955 we decided to buy an A-W Hydraulic Crane to assist with the maintenance work on our heavy construction equip-

ment. It quickly proved its value on such jobs as changing transmissions on trucks and tractors and for lifting out and transporting engines to the shop for overhaul. It is also useful for removing crawler tracks and roller frames from tractors.

"We find many other uses, too, for this highly mobile unit. Loading and unloading materials such as barrels of fuel oil, curing compounds, and air entraining agents. In addition, we have

found it very effective for laying reinforced concrete tile of up to 24-inch diameter.

"The A-W, in our opinion, is an exceptionally handy tool—our most versatile piece of equipment. Any contractor who does his own maintenance work will find dozens of jobs for it to do."

Find out how the A-W Hydraulic Crane can help you reduce downtime and build profits. See your nearby A-W distributor or write us.

Austin-Western

CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

For more facts, use Request Card at page 18 and circle No. 457





Designed without running gear or self-erecting equipment for lower initial cost, this Cedarapids Model H60A bituminous mixing plant has a capacity of 160 to more than 240 tph. Sectionalized units can be quickly stacked up by crane and easily transported by low-bed trailer. H Series plants are available in 6 sizes.

New line of stationary bituminous mixing plants

A new line of batch-type bituminous mixing plants for permanent or semipermanent installation is announced by the Iowa Mfg. Co.

Designated Cedarapids Model H Series, the units are available in six sizes, covering capacity ranges from 45 to over 240 tph. Designed without running gear or self-erecting equipment, they have in all other respects most of the same components and features found on Cedarapids Model G Series portable plants.

The complete Model H Series is made up of 10 basic units, including production-balanced mixer, dryer, dust collector, and feeder units, all of which can be combined into a num-

ber of different engineered arrangements to meet specific job conditions.

Weighing and mixing processes on Model H plants can be arranged for four different types of operation: (1) manual control, (2) semiautomatic control, (3) fully automatic control, and (4) automatic with remote control.

All plants in the Model H Series are tower-type, stack-up plants, designed with sectionalized units which can be quickly erected by crane, according to the manufacturer.

For further information write to the Iowa Mfg. Co., Dept. C&E, Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 32.

Duff-Norton

**Ball Bearing Screw Jacks
can't creep or drop—
will hold loads indefinitely**

Standard of the world for over 70 years



The Duff-Norton screw jack is a precision built mechanism. Available in 15 to 100-ton capacities.

Can be used upright or on side with equal efficiency—no fluids to leak, no air to "lock."

Duff-Norton Ball Bearing Screw Jacks, employing the basic inverted nut and screw principle, are locked in position when under tension, can't move up or down unless you insert the jack handle and apply hand power to ball bearing actuated gears in base that turn the nut. They are safe, foolproof, dependable, fully enclosed, rugged—seldom need lubrication or servicing.

For complete specifications on various capacities and name of your nearest recognized distributor, write the world's oldest and largest manufacturer of lifting jacks asking for Bulletin AD-12-S.

DUFF-NORTON COMPANY

P. O. Box 1889 • Pittsburgh 30, Pennsylvania

COFFING HOIST DIVISION • Danville, Illinois

DUFF-NORTON JACKS

Ratchet, Screw,
Hydraulic, Worm Gear



COFFING HOISTS

Ratchet Lever
Hand Chain, Electric

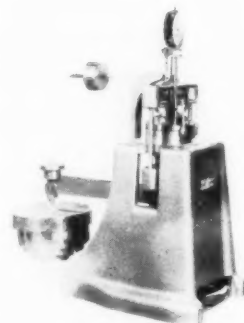
For more facts, use Request Card at page 18 and circle No. 458

Device predicts degree of soil load settlement

A new and compact soils load settlement device called the Levermatic consolidation apparatus is announced by Soiltest, Inc. The unit is designed to predict, through laboratory tests, the settlement of a foundation under a building, dam, bridge, or similar structure.

The Levermatic will apply a maximum pressure of 20 tons per square foot on a 2½-inch-diameter consolidation specimen, although the equipment is also adaptable to any size consolidometer of the fixed or floating ring types. The load is applied to the specimen through a single counter-balanced lever system.

An entirely self-contained unit, the apparatus can easily be carried by one man.



For further information write to Soiltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago, Ill., or use the Request Card that is bound in at page 18. Circle No. 40.

YOU CAN CHOOSE THE SIZE



1750-H
\$521.
D-9
D-8
TD-24
HD-21
HD-20
HD-19
TD-12

1500-H
\$471.
D-8
D-7
TD-18
HD-19
HD-16
HD-15

1000-H
\$345.
D-7
D-6
TD-18
TD-14
HD-16
HD-15
HD-10

750-H
\$229.
D-4
D-2
TD-9
TD-6
HD-7
HD-5

ROGERS*
DOZER RIPPER

AT YOUR LOCAL DEALER

* THE ORIGINAL
'RIPS WHERE OTHERS FAIL'



For more facts, use Request Card at page 18 and circle No. 459

CONTRACTORS AND ENGINEERS



This self-propelled Hobart unit features a 125-cfm rotary-type compressor mounted on the rear, and a 600-amp dc welder driven by a Chrysler V-8 engine. This same engine drives the vehicle.

Offer welder-compressor in self-propelled unit

A self-propelled unit for operations requiring both arc-welding current and compressed air is offered by the Hobart Brothers Co.

Mounted on the rear of the vehicle is a 125-cfm rotary-type compressor driven by a 4-cylinder gasoline engine. The compressor is completely self-contained, with the exception that it draws its gasoline from a common fuel tank.

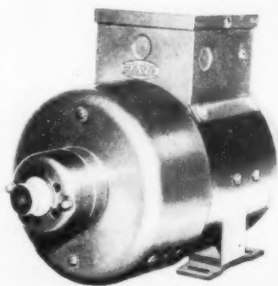
The welder is a 600-amp dc unit driven by a Chrysler V-8 engine. This same engine drives the vehicle through a special axle built by Hobart, and through a Chrysler Powerflite transmission and torque converter. The unit is also equipped with hydraulic power steering.

For further information write to the Hobart Brothers Co., Dept. C&E, Hobart Square, Troy, Ohio, or use the card at page 18. Circle No. 20.

For more data on any item, circle indicated number on card at page 18.

Extend rotary converter line to 3,000-watt output

The Kato Engineering Co. has extended its line of rotary converters to 3,000 watts ac output.



According to the firm, the larger sizes are offered to meet needs for small amounts of dc, and for special applications which require more dc than is supplied by most standard converters. If ac needs are greater than 3,000 watts, the company has available dc to ac motor-generator sets as large as 20 kw.

For further information write to the Kato Engineering Co., Dept. 18E, Dept. C&E, 1415 First Ave., Mankato, Minn., or use the Request Card page 18. Circle No. 124.

Vibrating screen attaches to conveyors, loaders

The Universal Engineering Corp. announces an optionally single or double-deck vibrating screen for attachment to belt conveyors and bucket loaders.

Designated Whizzer, the new unit is a "circle-throw"-type screen; the arched screen deck spreads material across the entire width of the screen cloth.

This vibrating screen can be driven

from the head shaft of the conveyor, with no separate power needed.

Twelve sizes of both single and double-deck models are available, from 4x2 feet to 8 feetx3 feet 6 inches.

For further information write to the Universal Engineering Corp., Dept. C&E, 625 "C" Ave. N. W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 150.

LOOK AT THE No. 977 LOAD OVER 18 TONS IN 4 MINUTES— ALL DAY LONG!



This is a road construction job between Durham and Chapel Hill, N. C. Loading sand for Nello L. Teer Co. is this Caterpillar No. 977 Traxcavator, averaging 18.4 tons per load. Its load time per truck is 4 minutes, timed right on the job. Supt. R. G. Moore states flatly: "Best truck loader there is."

A few reasons: the No. 977's track roller frames are extended for better stability; its 2 1/4 cu. yd. bucket tilts back 40 degrees at ground level, giving leverage at the cutting edge and preventing spillage; operator sits high and comfortable, out of the dust, with all controls conveniently at hand.

New with the No. 977: a Side Dump Bucket attachment (2 1/4 cu. yd.) that dumps to the left as well as forward and is directly interchangeable (same pins, bolts, nuts) with the standard bucket.

But don't just look at pictures—look at the dirt fly on your own job when a Cat No. 977 Traxcavator digs in. Call your Caterpillar Dealer right now and set up an eye-opening, truck-filling demonstration.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

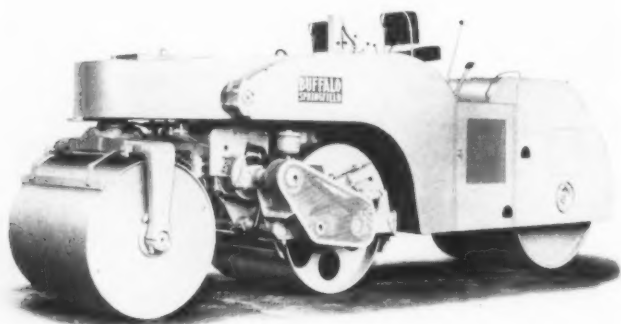
Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

FOR FAST LOADING

LOOK FOR YOUR CATERPILLAR DEALER IN THE



For more facts, use Request Card at page 18 and circle No. 460



Because the Model KX-25EV 3-axle vibratory roller is designed with end roll and drive roll forming a direct contact ahead of and behind the vibrating roll, the unit reportedly obtains greater densification of materials with fewer passes.

New 3-axle tandem roller is vibratory compactor

A new 3-axle vibratory tandem roller is announced by the Buffalo-Springfield Roller Co.

Designated Model KX-25EV, the machine has an independent power unit mounted between the end guide roll and the central guide roll. The power unit transmits power through V-belts to an eccentric axle shaft running through the center of the middle guide roll. This shaft turns at high speed, creating the vibrating action.

Because the unit's end guide roll

and the drive roll form a direct contact point ahead of and behind the vibrating roll, the vibration waves are controlled within a confined area, and the effort expended from the vibrating unit is always in a downward direction. According to the manufacturer, this results in greater densification of the materials with fewer passes, and allows greater depths of lifts to be compacted.

The vibrating unit is controlled from the operator's seat. Vibrations per minute are regulated through the throttle and governor control cable from this position.

The power unit for the vibrating roll is a heavy-duty gasoline engine rated at 75 horsepower at 2,200 rpm, and 69.5 horsepower at 2,000 rpm.

For further information write to the Buffalo-Springfield Roller Co., Division of Koehring Co., Dept. C&E, 1210 Kenton St., Springfield, Ohio, or use the Request Card at page 18. Circle No. 47.

with **DENISON** hydraulic equipment... **CATERPILLAR** did!



2000 PSI HYDRAULIC POWER

...for operating Caterpillar's rugged No. 9 Ripper is delivered by a single Denison "T" series vane pump. Payoff: jobs get done with troublefree power to spare for toughest workloads.

• Why? Because dependable 2000 psi Denison hydraulic power helps Caterpillar build lower operating cost and continuous, troublefree performance into its rugged earth-moving units.

Case in point: Here's Caterpillar's No. 9 Ripper — another of many construction units to be factory-equipped with Denison hydraulic equipment. The Ripper's hardworking teeth are powered by a single Denison vane-type pump which provides plenty of reserve "go" for toughest workloads.

Plus benefits: All-weather pump starting without pump damage... speedy field servicing... less weight... less cost-per-horsepower—with a Denison pump as the heart of a hydraulic system.

Caterpillar picks Denison hydraulic equipment for reliability... quality... proven field performance. It pays off in helping keep Cat® units operating continuously... profitably month after month.

It's the kind of job your Denison Hydraulic Specialist can help you do now. Ask him more about how Denison hydraulic power... up to 5000 psi... can improve performance of your equipment.

DESIGNERS—ENGINEERS!

Write for your copy of Bulletins 200 and 201—"How to Design More Efficient Hydraulic Power Into Mobile Machinery" and "Balanced Vane 2000 psi Hydraulic Pumps".

DENISON ENGINEERING DIVISION
American Brake Shoe Co.
1262 Dublin Road • Columbus 16, Ohio



HYDRAULIC PRESSES•PUMPS•MOTORS•CONTROLS

Denison and Denison Hydraulics are registered trademarks of Denison Eng. Div., ABCO



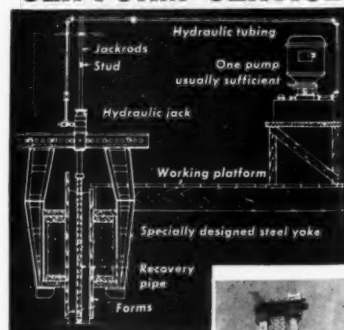
For more facts, use Request Card at page 18 and circle No. 461

Air-powered rock drill bores to 40-foot depth

The Joy Mfg. Co. announces its new air-powered, self-propelled TDM Trac-Drill. Designed to carry the Joy TM-450 drill, the machine is said to be capable of drilling 3½-inch-diameter blast holes to a depth of 40 feet or more.

Completely power-operated, the TDM Trac-Drill offers an exceptionally wide range of drilling positions. It is capable of drilling from the toe-hole position of minus 10 degrees at ground level, up through vertical, and to 45 degrees forward of vertical. Horizontal holes approximately 8 feet above ground level can

HYDRAULIC SLIPFORM SERVICE



Jacks, yokes, pumps, pipes, jackrods—complete form-raising service at an all-inclusive rental. Proven successful for bridge piers, silos, elevators, apartment houses, etc. Write for details.



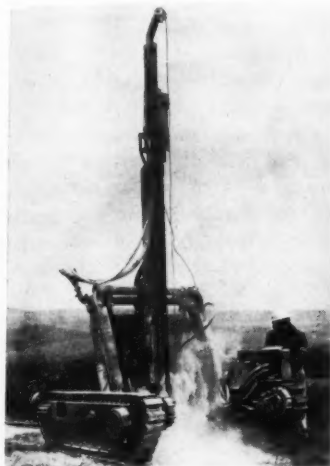
210" BRIDGE PIER

B. M. HEED, INC.

30-01 37th Ave., Long Island City 1, N.Y.
In San Francisco: 630 Sixth St.
For more facts, circle No. 462

CONTRACTORS AND ENGINEERS

For more facts on these products, circle the indicated number on the Request Card at page 18.



Completely power-operated, the Joy TDM Trac-Drill is designed to drill 3½-inch-diameter blast holes to a depth of 40 feet or more. It offers a wide range of drilling positions.

be drilled, as well as true vertical holes on a 45-degree grade. According to the manufacturer, up-holes can be drilled at any angle up to 45 degrees above horizontal, and the feed tilts 15 degrees to either side of vertical allowing true vertical holes to be drilled on uneven terrain.

Two Joy 6-cylinder, radial air motors combine to provide a total of 23 horsepower for tramping speed of 117 fpm.

Available with feeds for handling 10-foot coupled steels, the machine can also be equipped with an air-powered winch for handling and uncoupling drill steel.

For further information write to the Joy Mfg. Co., Dept. C&E, 333 Henry W. Oliver Bldg., Pittsburgh 22, Pa., or use the Request Card at page 18. Circle No. 108.

Offer nylon truck tire for heavy truck usage

A nylon truck tire designed to give improved service in heavy truck usage is announced by The Goodyear Tire & Rubber Co.

Designated FWT-2, the tire is specially adapted for use on front wheels of concrete ready-mix and high-volume stone and gravel haulers, where the axle is heavily loaded and short turns with power steering are common. It may also be used on drive and trailer wheels for similar heavy duty.

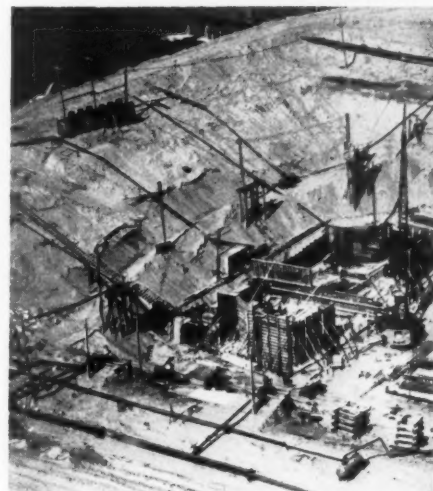
The tire's design is said to reduce the tendency for stones to catch in tread grooves and cleaning edges.

The FWT-2 tires, with Xtra-Tread non-skid depth, are available in two sizes: 10.00×20 and 10.00×22, both 12-ply.

The tire is also available in size 11.00×20, 12-ply, with standard tread depth.

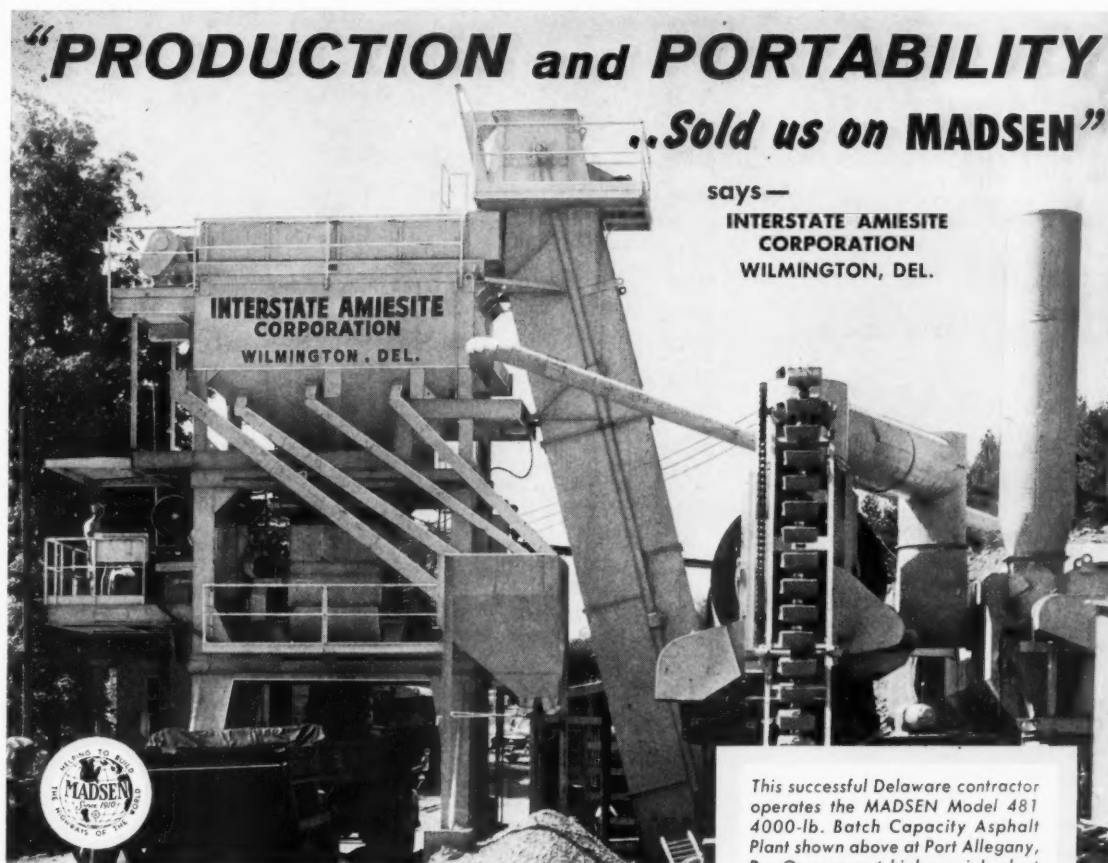
For further information write to The Goodyear Tire & Rubber Co., Dept. C&E, 1144 E. Market, Akron 16, Ohio, or use the Request Card at page 18. Circle No. 127.

This approach to the Deas Island Tunnel under the Fraser River at Vancouver, British Columbia, required extensive dewatering during excavation and construction of the ventilation building, center. The joint-venture contractors called in John W. Stang Corp. to do the job. Nine deep wells were drilled, and wellpoints were used. Electric pumps were used for the dewatering system. Note water pouring into the river from the outlet pipe, upper left. For further information write to the John W. Stang Corp., Dept. C&E, Box 631, Bell, Calif., or use the Request Card at page 18. Circle No. 176.



"PRODUCTION and PORTABILITY" ..Sold us on MADSEN"

says—
INTERSTATE AMIESITE
CORPORATION
WILMINGTON, DEL.



BIG BUT PORTABLE—THE MADSEN MODEL 481 ASPHALT PLANT HELPS YOU MAKE MORE PROFITS OVER THE SEASON ON EVERY JOB

Ability to turn out greater tonnage hour-after-hour plus 100% portability have made the MADSEN Model 481 Asphalt Plant ideal for today's fast-moving highway jobs.

The 481 is oversize throughout including larger elevator, screen, bins, weigh-box, mixer and drives. It is built in 4000-lb., 5000-lb. and 6000-lb. batch capacities. All air operation of bin gates, weigh-box, asphalt injection and mixer gate help to make this plant fast and easy to operate. Fully automatic operation is optional. Features such as the exclusive MADSEN roll-away weigh-box assembly and the externally removable liner sections of the MADSEN Twin-Shaft Pug Mill Mixer... assure easy, low-cost servicing and maintenance.

These are just some of the money-making advantages you get in the MADSEN Model 481 Asphalt Plant. Why not get the complete story on this big capacity, portable plant today.



Equipment that Serves.

MADSEN MODEL 481 ASPHALT PLANT

Ask your MADSEN Distributor for Catalog No. 800-A or write MADSEN Works
Baldwin-Lima-Hamilton Corporation P.O. Box 38, La Mirada, California

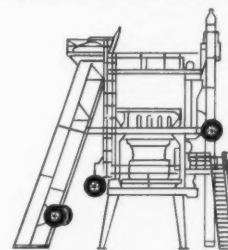
THE MADSEN LINE OF PRODUCTS
FOR THE ASPHALT PAVING INDUSTRY

ASPHALT PAVING PLANTS • PUG MILL MIXERS • AGGREGATE DRYERS • DUST COLLECTOR UNITS
ROAD PUG TRAVEL-MIX PLANTS • WEIGH BATCHERS • SUPER FLOAT AND JOHNSON FLOAT FINISHERS
ASPHALT TANKS • ROYAL CROWN PUMP VALVES • ASPHALT AND FUEL PUMP UNITS

For more facts, use Request Card at page 18 and circle No. 463

This successful Delaware contractor operates the MADSEN Model 481 4000-lb. Batch Capacity Asphalt Plant shown above at Port Allegany, Pa. On a recent highway job plant produced 25,000 tons of bituminous mix with a daily production rate up to 1500 tons. Compact, unit-construction and complete portability enables owner to quickly dismantle plant, move and set up again... where the big jobs are.

• If desired, screen bin unit, mixer weigh-box section and hot stone elevator may be wheel-equipped at the factory or in the field, as shown below.



MADSEN WORKS
BALDWIN-LIMA-HAMILTON
CONSTRUCTION EQUIPMENT DIVISION
DIVISIONS: Austin-Western • Eddystone •
Electronics & Instrumentation • Hamilton •
Lima • Loewy-Hydropress • Madsen • Pelton
• Standard Steel Works





The use of high-strength alloy steel in this Rogers general-utility trailer results in a 25-ton-capacity unit that weighs only 9,000 pounds.

Trailer weighs 4½ tons, has 25-ton capacity

A 9,000-pound general utility trailer with a capacity of 25 tons is available from the Rogers Bros. Corp.

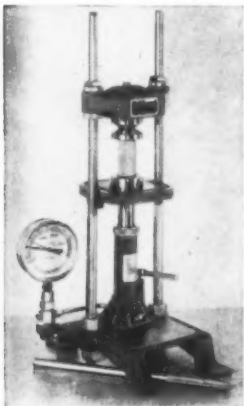
Designated Model TVT, the unit features a beaver-tail extension for easy loading, as well as the handling of longer loads. A variety of loads is

made possible by the trailer's open-type bed.

For further information write to the Rogers Bros. Corp., Dept. C&E, 108 Orchard St., Albion, Pa., or use the Request Card that is bound in at page 18 of this issue. Circle No. 128.

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

Cut Road Building Costs with SOIL AND BASE MATERIAL TESTS... on the CARVER LABORATORY PRESS



Numerous soil tests necessary prior to road building or other construction can be quickly and easily accomplished on the portable, hand-operated, self-contained CARVER LABORATORY PRESS. Moisture content, compaction shear and other soil or base material characteristics are readily determined with this on-the-spot equipment.

Samples are quickly pressed for soil tests or further analysis and testing with Carver Test Cylinders, available in two sizes—1½" and 2¼" diameter. Other Standard Accessories available include Carver Swivel Bearing Plates for comparative crushing tests of 2" x 2" cubes; 2" x 4" cylinders and like requirements.

Several state road departments have used this equipment successfully for years. A Florida State Road Dept. engineer reports "Six Carver Presses are used daily for the numerous soil tests—." They have recently purchased four additional presses. The Texas State Highway Dept. has purchased over 30 Carver Laboratory Presses for such use—perhaps this thoroughly standardized Press will answer your pressing problems.

- CRUSHING TESTS • BRIQUETTING
- BREAKING TESTS • SHEAR TESTS
- BENDING TESTS

FRED S. CARVER INC.
HYDRAULIC EQUIPMENT
7 CHATHAM ROAD, SUMMIT, N. J.

Send catalog, describing Carver Laboratory Press and Standard Accessories.

NAME

FIRM

ADDRESS

For more facts, use coupon or circle No. 464

P&H announces world's greatest truck crane 70 tons at 15 ft. radius

Here's another example of P&H design leadership in meeting contractors' needs for larger capacity equipment to hold down costs and do more work at a greater profit.

It's the big P&H 775-TC. An innovation on rubber. Handles 200 ft. of boom and jib. Smooth "stepless" swing movement of the boom with capacity load is the result of an electro-magnetic swing assembly. It's called Magnetorque®, exclusive P&H development appearing for the first time on a truck crane.

A full 70-Ton capacity at a practical 15' radius. This tremendous lift and reach are combined with exceptional truck crane mobility in the 775-TC. Superior P&H engineering has scientifically distributed the weight over four axles to



MAGNETORQUE, the electro-magnetic swing assembly, eliminates swing linings and friction on your swingers — no wear, no adjustments — faster work cycles, less operator fatigue, increased production.



A machine tractor by the Co., Des 811H larger paper provided matic negat

allow highway travel Concrete pouring, setting steel or precast concrete are all done more profitably and safely

Hand-operated calculator weighs only 14 pounds

A new Simplex 10-key adding machine, hand-operated for adding, subtracting, and listing, is announced by the Monroe Calculating Machine Co., Inc.

Designated Little Giant Model 811H14, the unit is said to be no larger than an 8x11-inch sheet of paper, and weighs only 14 pounds. It provides direct subtraction and automatic credit balance. Minus items, negative totals, and subtotals print



in red.

Listing capacity is 999,999.99; to-

taling capacity 9,999,999.99, both positive and negative.

For further information write to the Monroe Calculating Machine Co., Inc., Dept. C&E, 555 Mitchell St., Orange, N. J., or use the Request Card at page 18. Circle No. 120.

New rubber-lined pumps handle gritty materials

Rubber-lined pumps for applications involving gritty materials are available from the Allis-Chalmers Mfg. Co.

Units offered are the 3x3-inch Model NRLO, an open impeller-type pump, and the NRLO closed-impeller pump which ranges to 10x8 inches in size. The latter model has a 3,000-gpm capacity, with a 140-foot head.

Between the two impeller types, it is possible to handle liquids with solids from 325-mesh to minus 1/8-inch diameter, according to the manufacturer.

Parts interchangeability is a feature of these pumps, with all models falling within three bearing bracket groups.

For further information write to the Allis-Chalmers Mfg. Co., Dept. C&E, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 64.

Surveying time slashed with electronic system

An electronic surveying system, said to take only 40 minutes to measure the distance between points 40 miles apart, is available from Tellurometer, Inc.



Engineers using the electronic Tellurometer system of measuring distances can be miles apart and maintain communication by radiophone. With the Tellurometer technique, engineers can measure in minutes distances that would take several days by traditional triangulation or taping.

Called Tellurometer, the system is based on the transmission of electronic waves from one point to another. A transmitter at one station sends microwaves to a receiver at the other station. The time it takes for the waves to reach the receiver and return is read at the transmitter end in micromillisecons. This reading, in turn, is easily translated into miles, feet, and inches. The 40 minutes required to take a measurement includes the time needed to set up the instruments and dismantle them.

Both the transmitter and receiver are small, compact units, easily portable through rough terrain by a two-man team. The only power plant required is an ordinary automobile battery. The manufacturer points out that communication between the two operators can easily be maintained by 2-way radiophone.

According to the company, this radar-type system permits a maximum possible error of only 11 inches in 40 miles. It is not recommended, however, for distances shorter than 500 feet.

For further information write to Tellurometer, Inc., Dept. C&E, 204 Dupont Circle Bldg., Washington, D. C., or use the Request Card at page 18. Circle No. 41.

—For more facts, circle No. 465

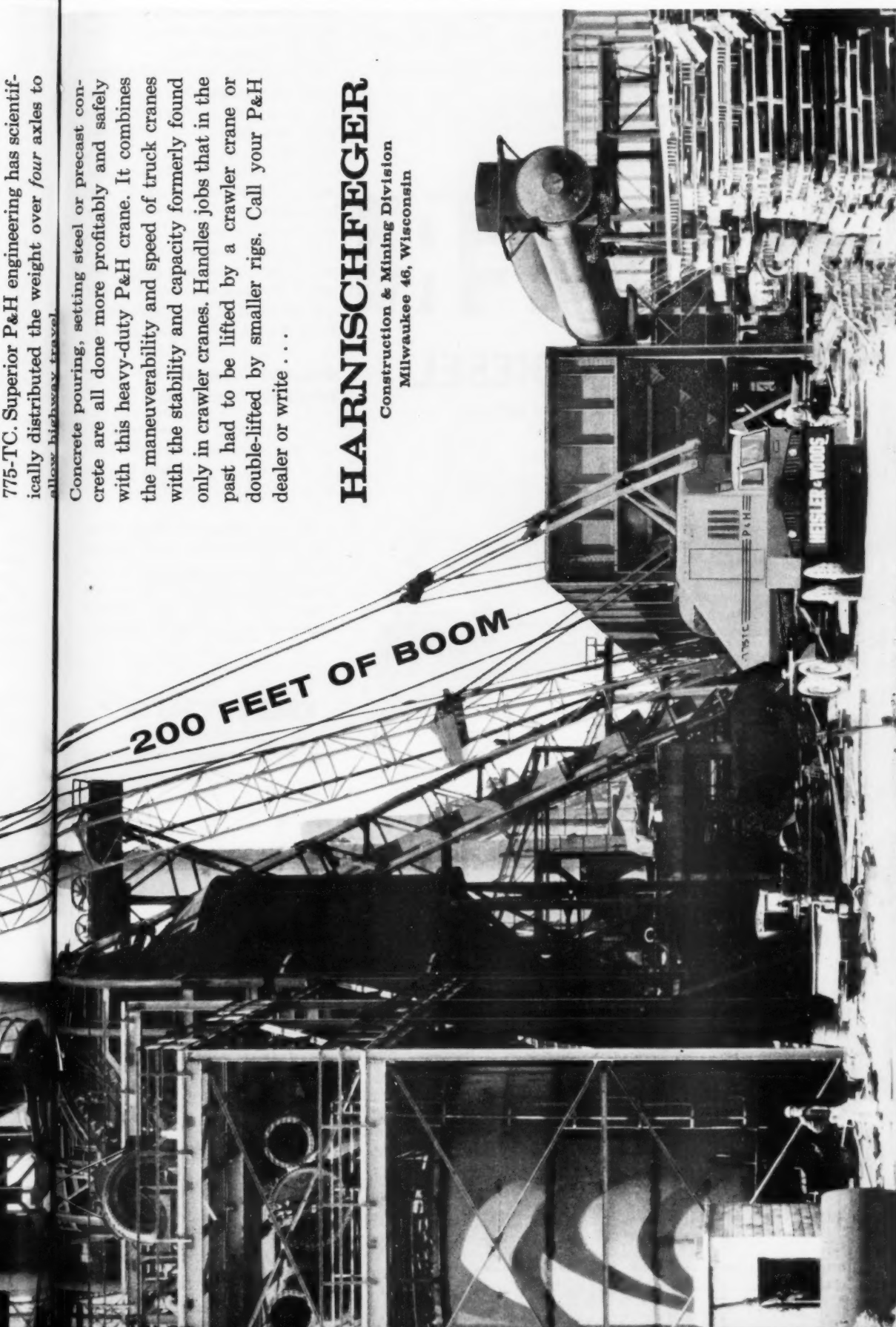
775-TC. Superior P&H engineering has scientifically distributed the weight over four axles to allow highway travel.

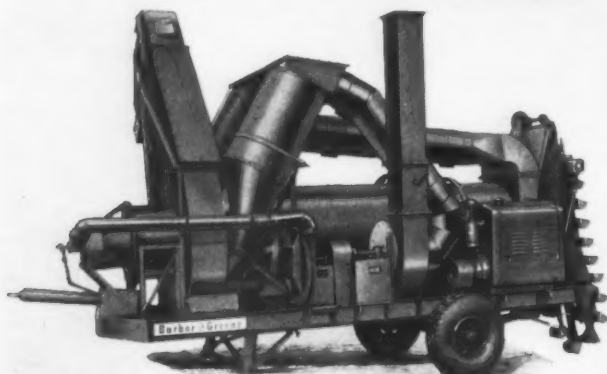
Concrete pouring, setting steel or precast concrete are all done more profitably and safely with this heavy-duty P&H crane. It combines the maneuverability and speed of truck cranes with the stability and capacity formerly found only in crawler cranes. Handles jobs that in the past had to be lifted by a crawler crane or double-lifted by smaller rigs. Call your P&H dealer or write . . .

HARNISCHFEGER

Construction & Mining Division
Milwaukee 46, Wisconsin

200 FEET OF BOOM





The Barber-Greene Model 832 aggregate dryer is designed for the 40 to 55-tph-capacity range. It is adaptable to either the firm's continuous-mix or batch plants of appropriate capacity, or to similarly rated plants of most other makes.

Add portable dryer to asphalt-plant line

The Barber-Greene Co. announces the addition of the Model 832 aggregate dryer to its asphalt plant and component line.

A rubber-tire-mounted, portable unit, the Model 832 is in the 40 to 55-tph-capacity range, and is adaptable either to the firm's continuous-mix or batch plants of appropriate capacity, or to similarly rated plants of virtually any other make.

Both hot and cold elevators are

carried integrally on the Model 832 frame. The cold elevator features a telescoping frame that provides maximum ground clearance in travel. The hot elevator is of the company's "roto-elevator" design, in which the buckets travel around the circumference of the drum at the discharge end.

Also carried integrally on the frame is a two-cyclone dry-dust collector unit, which reclaims dust from the dryer's exhaust and returns it to the boot of the hot elevator.

The unit can incorporate burners of the high-pressure steam atomization, natural gas, or low-pressure air atomization types. The latter is listed as standard.

Also standard is a 70-hp gasoline engine, with either a 75-hp diesel or 50-hp electric power unit available as an optional feature.

For further information write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 100.

Diesel down your costs

—with the New

OLIVER

OC-4 DIESEL

(gas engine optional)



**LOWEST PRICED
DIESEL ON
THE MARKET**

Now you have it! Diesel power in a compact, all-purpose crawler—the top-regarded Oliver OC-4. Now you can dieselize your small tractor operations, get dollar-earning economy in those countless jobs where the OC-4 is sized right to do them better...and where it's wasteful to tie up larger rigs.

See what you get!

- For the first time, modern diesel power in a compact, proved crawler tractor.
- 4-cycle, 130-cubic-inch displacement, 29.5 h.p.* electric starting diesel—fewer moving parts and therefore less wear, less maintenance. Lower costs all ways!
- Priced low—you can profit from an OC-4 now.
- Deluxe engine features: overhead valves; dry, precision cylinder sleeves; pressurized cooling; simple, single fuel injection pump; two-stage fuel filtering; solenoid starting; precision-balanced rotating parts; effective air cleaner; high-torque performance.

Only crawler in its class to give you diesel advantages!

- "Travel-Reverser" transmission—for same speed reversing in any gear setting. (Optional.)
- "Slo-Low" auxiliary transmission—for 50% speed reduction, forward or reverse, in any of the four gear ranges. (Optional.)
- Special loader model designed strictly for loader work. It's faster!
- Also, new gasoline-engine-powered OC-4.
- Mounts job-matched attachments for wide work range.

*Manufacturer's tests

See and try the OC-4, diesel or gasoline powered—the lowest priced, full ability crawler of its size!



THE OLIVER CORPORATION

Industrial Division

19300 Euclid Avenue, Cleveland 17, Ohio

a complete line of industrial wheel and crawler tractors and matched allied equipment

For more facts, use Request Card at page 18 and circle No. 466

Giant belt conveyor loads big trucks fast

A loader said to be capable of loading 19-yard scrapers in as little as 17 or 18 seconds has been added to the Kolman Mfg. Co.'s line of heavy-duty conveyors.

Designated Model 303, the conveyor—50 feet long, with a 5-foot-wide belt—requires a diesel power unit of approximately 100 horsepower. The total weight of the unit complete with power is about 40,000 pounds.

GOT THIS? (Predraining Problem)



GET THIS! (Skilled Wellpoint Engineering)



From

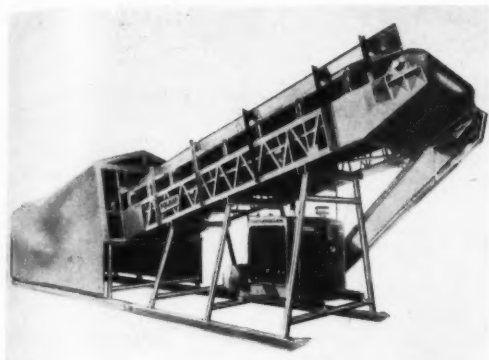
GRIFFIN

WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.
West Palm Beach, Fla.

For more facts, circle No. 467

CONTRACTORS AND ENGINEERS



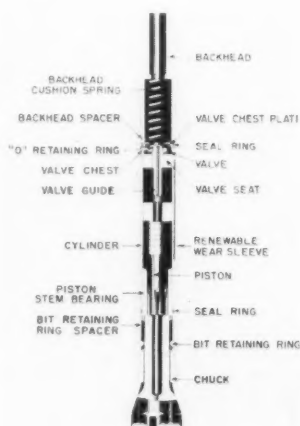
This Kolman Model 303 loader, featuring a 5-foot-wide belt, reportedly can load 19-yard scrapers in less than 20 seconds. The conveyor requires a diesel power unit of approximately 100 horsepower.

The machine is equipped with a feeder-trap combination with the tunnel enclosure of the tail section extending 29 feet ahead of the tail plate. Driven through six C-section V-belts to a heavy-duty gear reducer, the unit is operated by one man from a platform located at the head pulley level. From this vantage point, the operator can readily oversee the complete operation, and handles both feed and discharge by means of extended controls to the feeder gate, engine throttle, and clutch.

For further information write to the Kolman Mfg. Co., Dept. C&E, West 12th St., Sioux Falls, S. D., or use the Request Card at page 18. Circle No. 53.

Down-the-hole drill air-cleans continuously

A design change on the Depthmaster down-the-hole drill, said to provide continuous hole-cleaning air even when the drill is not in operation, is announced by the Ingersoll-Rand Co.



The manufacturer points out that all operating air is exhausted through the bit; therefore, all the air is used for hole cleaning. This feature eliminates the need for special exhaust ports in the side walls of the cylinder, which can let harmful cuttings into the drill.

The Depthmaster is available in three sizes for blast holes from 4 3/4 to 7 inches.

For further information write to the Ingersoll-Rand Co., Dept. C&E, Phillipsburg, N. J., or use the Request Card at page 18. Circle No. 132.

For more data on any item, circle indicated number on card at page 18.

No Matter What
SIZE...



No Matter What
SHAPE...



QUINN CONCRETE PIPE FORMS

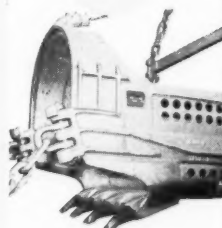
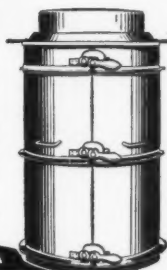
Set The STANDARD For Producing Quality Pipe!

Over 50 years of experience go into the production of every Quinn Concrete Pipe Form. That's why the Quinn Heavy Duty form is recognized as the STANDARD the world over for producing quality concrete pipe at the lowest cost. Used in making pipe by vibration, spading, or tamping. Sizes for pipe 10" to 120" and larger. Tongue and groove (as shown) or bell end pipe in any length desired. No matter what size, shape, or length pipe you need, there's a Quinn pipe form made to fit your requirements. Write today for our FREE catalog and estimates.

Also Manufacturers of QUINN CONCRETE PIPE MACHINES

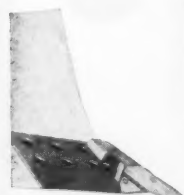
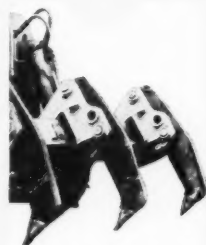
Quinn WIRE & IRON WORKS BOONE, IOWA

For more facts, use Request Card at page 18 and circle No. 468



*Teeth that
really dig*

MEAN MORE PRODUCTION
MORE PROFIT



H&L

1540 SOUTH GREENWOOD AVE.
MONTEBELLO, CALIFORNIA

TOOTH CO.

TEETH FOR ALL TYPES
EXCAVATING EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 469

Aluminum construction features hold the curb weight of this GMC Model D860 highway tractor to 10,450 pounds. Its gross combination weight ratings are 60,000 or 65,000 pounds, depending on the engines and axles used. ▶



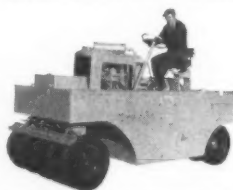
Rosco Roller owned by Jay W. Craig Co., Minneapolis, on job at Aitkin, Minn.

Increase Operator Efficiency and Produce More Work Per Hour with the ROSCO ROLLER SR-9-T2

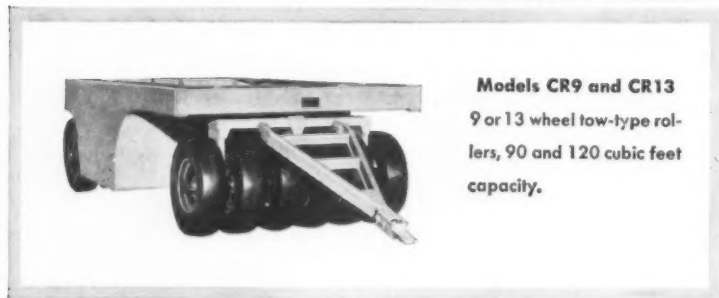
- ★ Torque Converter ★ Reverse-Omatic Drive
- ★ Constant Speed ★ Power Brakes and Steering

With this improved 9 wheel self-propelled roller your operator can surface nearly a 6 foot width at working speeds up to 15 MPH. The torque converter and Reverse-Omatic clutch and transmission eliminate scuffing of the surface. Power steering and a throttle setting device that returns to manual at a touch reduce operator fatigue and produce more work per hour.

A modern large-bore, short-stroke engine produces a surplus of power and travel speeds to 30 MPH. Water compartments are integral with the body and other components are set low for safe center of gravity and operator visibility. These features and Rosco's quality construction make the SR-9-T2 a solid investment and profit maker.



Rosco Roller SR-9-T2 with water attachment



Models CR9 and CR13
9 or 13 wheel tow-type rollers, 90 and 120 cubic feet capacity.

ROSCO MINNEAPOLIS
ROSCO MANUFACTURING CO.
3118 SNELLING AVE. • MINNEAPOLIS 6, MINNESOTA

For more facts, use Request Card at page 18 and circle No. 470



Cadmium Plated Locking Screw With Shakeproof Washer Insures Longer Life.

EASY TO INSTALL, NO BUSHINGS OR FITTINGS. 4 SIZES MADE WILL FIT ALL EXHAUSTS FROM 1 3/8" to 5" O.D.

NEW "CANCAP" EXHAUST PROTECTORS KEEP OUT DAMAGING RAIN AND WEATHER automatically.

CONTRACTORS Versatile Tool . . .

for easier, safer truing, tightening, lifting, binding.

Turnbuckle principle has wide range of application. Full 8" take-up. Available also with 20" barrel with 18" take-up. Upset forged barrels, forged Acme threaded screws. Pawl spring loaded, double acting.

Ask for AFM RATCHET BINDER

CANTON MFG. CO. Telephone GLEndale 3-3614
2400 - 13th St. N.E., CANTON 5, OHIO

For more facts, use Request Card at page 18 and circle No. 471



Diesel highway tractor lightweight but rugged

A lightweight diesel highway tractor designed for the 55,000-pound and up hauling range is announced by the General Motors Truck and Coach Division.

Designated Model D860, the tractor has aluminum construction features giving it a curb weight of 10,450 pounds.

Standard on the new unit is the GM 6-71SE diesel, developing 189 horsepower at 1,800 rpm. The optional engine is the GM 6-71SE, developing 210 horsepower at 2,100 rpm.

For further information write to the General Motors Corp., Truck & Coach Division, Dept. C&E, 660 S. Blvd. E., Pontiac 11, Mich., or use the Request Card at page 18. Circle No. 137.

Conveyor chain increases rail load-bearing area

A new type of conveyor roller chain is announced by the Diamond Chain Co., Inc.

Called Dura-Weld, the chain has its top plate welded to the link plates by projection welding. According to the company, it allows the use of wider supporting rails, providing up to 35 per cent more rail load-bearing area.

Because each link is a connecting link, Dura-Weld is detachable at any point. This, the manufacturer points out, permits ease of installation and replacement.

Write to the Diamond Chain Co., Inc., Dept. C&E, 402 Kentucky Ave., Indianapolis 7, Ind., or use the Request Card at page 18. Circle No. 27.



To help prepare the JUPITER C for its flight into history—the scientists and engineers at Redstone Arsenal chose the BUCK HOISTOWER.



Tow it right to the jobsite.

the BUCK hoistTower

Self-erecting to a height of 45 ft. The tower can be placed and erected by just one man in 23 minutes.

The HOISTOWER will raise a load of 2500 lbs. to heights of 175 ft. and more. With speeds up to 170 ft. a minute, it is the strongest and fastest portable HOISTOWER in the world.

Concrete Buckets, Poop Decks, Booms, Extra Sections and other Accessories, make it the most versatile and money-making machine a contractor can have.

For your nearest dealer or more information—write

B BUCK EQUIPMENT CORPORATION
720-D Anderson Ferry Road
Cincinnati 38, Ohio

For more facts, circle No. 472

CONTRACTORS AND ENGINEERS

Expanded mixer line includes 5, 5½-yarders

New 5 and 5½-cubic-yard Rex transit mixers, said to incorporate the design introduced earlier in the firm's 6, 6½, and 7-yard units, are announced by the Chain Belt Co.

Simplicity and ease of operation are featured, and a new single-lever control operates the clutch, gearshift, brake, and automatic throttle.

Other features include larger-diameter and steep-sloped hoppers, faster drum rpm, and improved blading. Besides imparting a faster and more thorough mixing action, the blading system from front to back is also said to accelerate discharging action, which is further improved by

the low-angle drum and wider, deeper-dished chutes.

A wide range of options for any operating requirement is offered. Air pressure or water pump, saddle or top-mounted flush tanks, or a 2-compartment siphon-type measuring device water tank are available.

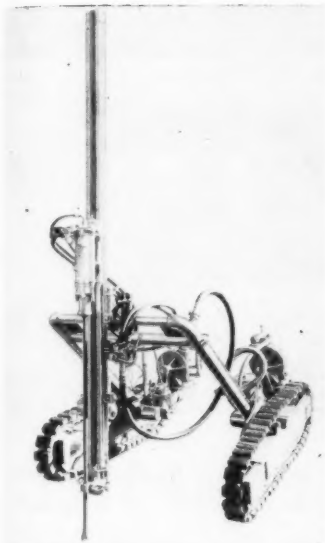
The new models may be equipped with either rear-mounted separate engine power or front engine power takeoff.

For further information write to the Chain Belt Co., Dept. C&E, 4701 W. Greenfield Ave., Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 65.



◀ The Rex 5 and 5½-cubic-yard mixers meet a wide range of operating requirements.

Announce new air crawler for rock-drill mounting



The Air-Cat Model MM4 crawler for rock drilling can accommodate any size or make of drill, up to 4½-inch bore and 16-foot feed. The unit's U-bar construction is said to make it ideal for all drilling positions.

size or make of drill, up to a 4½-inch bore and 16-foot feed. According to the company, the machine's U-bar construction enables the drill to be positioned from full horizontal on the ground for toe holes, to full vertical for down holes.

The Air-Cat MM4 includes such features as automatic brakes, built-in 2-gallon line oiler, articulating tracks with rubber pads, spring-loaded take-ups, and geared final drive.

Power is supplied by two Eimco 7½-hp air motors.

For further information write to the Clifden Rocktool Co., Inc., Dept. C&E, Box 235, Rockaway, N. J., or use the Request Card at page 18. Circle No. 4.

A new air crawler for rock-drill mounting is available from the Clifden Rocktool Co., Inc.

Designated Air-Cat Model MM4, the unit reportedly can mount any



Only Jaeger delivers 600 cfm at 1650 rpm

Although powered with the same GM 6-71 diesel engine as the Jaeger "600", other compressors run 150 rpm faster to produce the same 600 cfm of air. In 8 hours' continuous operation a Jaeger averages 72,000 fewer revolutions, saves miles of engine piston travel and many pounds of fuel. Jaeger "125", "250" and "365" sizes are comparably efficient. See your Jaeger distributor for complete cost-saving data, or request Catalog JC-7.

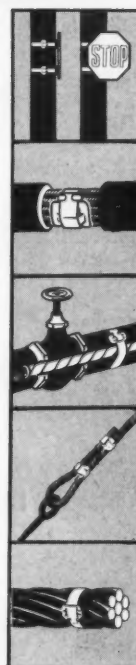
THE JAEGER MACHINE CO., 701 Dublin Ave., Columbus 16, Ohio

For more facts, use Request Card at page 18 and circle No. 473

with **BAND-IT** CLAMPS you can




BAND IT
FASTEN IT
CLAMP IT
CONNECT IT
BRACE IT
CLASP IT
SECURE IT
ANCHOR IT
TIE IT
CINCH IT



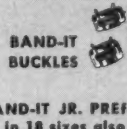
EASIER • QUICKER • LONGER • STRONGER

Clamps of all diameters formed without waste using only the

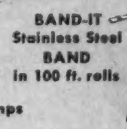
BAND-IT 'TRIO'



BAND-IT TOOL



BAND-IT BUCKLES



BAND-IT
Stainless Steel
BAND
in 100 ft. rolls

(BAND-IT JR. PREformed clamps in 18 sizes also available)

BAND-IT band and buckles available in four widths (¾", ½", ¼", ⅜") and in four metals—type 201 stainless steel, type 316 stainless steel, hi-carbon coated steel and silicon bronze.

BAND-IT clamps conform to any shape—any size.

Factory shipments of all four metals made to distributors in any quantity within 24 hours of receipt of order.

**SEND FOR NEW, FREE
16 PAGE CATALOG**

Over 1500 authorized **BAND-IT DISTRIBUTORS** throughout the United States and in 59 other countries of the world.

BAND-IT CO.

Incorporated 1937

4775 DAHLIA STREET • DENVER 16, COLORADO U.S.A.



For more facts, use Request Card at page 18 and circle No. 474

For more facts on these products, circle the indicated number on the Request Card at page 18.

KA-MO DRILLS

used for installing

SAND DRAINS



125-ft. KA-MO auger at full depth using 58 H.P. electric drill motor.

VERTICAL BORING

For pre-boring for piling—
drainage installations—
telephone, telegraph, power
or post holes—soil testing
foundation casing

ANGULAR BORING

For anchor holes—batter piling

KA-MO vertical drills can be suspended from a crane boom; can be used with pile driver leads and operated from an "H" beam, or can be operated from any line truck equipped with a boom.



12" dia.—125-ft. continuous KA-MO vertical drill unit extracted from casing

HORIZONTAL BORING

FOR water, sewer, oil and gas pipelines—tunneling—electric or telephone cable—electric or gas services

UNDER freeways—highways—railroad beds—airport runways—lawns—alleys—trees

THRU sand—clay—gumbo—hardpan—brick or concrete walls—frost—shale—limestone—other mineral formations

POWERED BY

AIR	HYDRAULIC	ELECTRIC	GASOLINE
4 H.P. to 18 H.P. or in dual or triple drives to 45 H.P.	11.4 to 50 H.P.	1.9 H.P. to 100 H.P.	Engine Drive

Drill sizes 2" to 48" diameter—sectionalized lengths. Information on special sizes and equipment available upon request.



KA-MO TOOLS, INC.

EARTH BORING EQUIPMENT

1845 SOUTH 55th AVE. • CICERO 50, ILL.

For more facts, use Request Card at page 18 and circle No. 475



GIANT SCAFFOLDS on the job!

Here's the answer...for any type construction requiring extra long, strong scaffolding. It's Duo-Safety's new, aluminum AS2H Scaffold, shown here in one of its many applications. Designed throughout for extreme ruggedness, for maximum safety. Ideal for buildings, bridges, air line work, off-shore drilling—wherever length and strength are important. MODEL AS2H is available in a variety of sizes—any practical length over 35 feet. Choice of wood platform or non-slip grip strut.

Write For New "Ladders for Construction" Catalog No. 89-C, showing the complete Duo-Safety line of ladders and scaffolds.

DUO-SAFETY LADDER CORPORATION
513 W. Ninth Avenue, Oshkosh, Wisconsin

Send me the "Ladders for Construction" Catalog.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____

STATE _____

For more facts, use coupon, or Request Card at page 18 and circle No. 476



This Failing rotary drilling unit is mounted on a Model GF-660 Crane Carrier truck. The new rig is designed to use both conventional-type rock or drag bits, as well as the new down-in-the-hole tools for very hard formations.

Portable drilling rig uses variety of bits

A new portable rotary drilling rig, designed for drilling blast holes, taking cores, soil sampling, and other foundation work, is announced by the George E. Failing Co.

The unit is mounted on a Model GF-660 Crane Carrier truck powered by a GMC Model 4-71 diesel engine. The truck engine furnishes power for the rotary table.

The air compressor on the rig is a Le Roi Model 100-S2, and it is powered by a GMC 6031-C diesel engine, with hydraulic full load governor. The new rig is designed to use both conventional-type rock or drag bits, as well as the new down-the-hole tools. Three hydraulic leveling jacks are standard equipment on the unit.

For further information write to the George E. Failing Co., subsidiary of Westinghouse Air Brake Co., Dept. C&E, P. O. Box 872, Enid, Okla., or use the Request Card that is bound in at page 18 of this issue. Circle No. 91.

New electric plants are gasoline-driven

Three high-capacity, ac, gasoline-engine-driven electric generating plants in 100,000, 125,000, and 150,000-watt sizes are announced by D. W. Onan & Sons, Inc.

The Model 100WA is a complete electric generating plant (as are the other two units), with the gasoline engine, alternator, exciter, and control panel assembled into one compact unit. This unit is rated at 100 kilowatts, 125 kva at 0.8 power factor, and is available in all standard voltages.

Prime mover for the 100WA is the Waukesha Model 145-GZBU 6-cylinder engine, developing 219 horsepower at 1,800 rpm.

Optional accessories for this 100-kw plant include a water-cooled exhaust manifold, natural or LP gas carburetion and heat exchangers, fuel accessories, and line transfer controls.

For further information write to D. W. Onan & Sons, Inc., Dept. C&E, 2515 University Ave. S. E., Minneapolis, Minn., or use the Request Card that is bound in at page 18 of this issue. Circle No. 10.

MORE WORKING TIME FOR ALL "CAT" TRACTORS



Pictured is the Campbell Cab mounted on a Model D-9 "Caterpillar" tractor. Also fits the D-8, 14-A and 15-A series.

CAMPBELL ALL-WEATHER CABS ARE CUSTOM BUILT FOR "CATERPILLAR"

Summer or winter, regardless of the weather, your "Cat" will be on the job. Your Campbell All-Weather cab will pay for itself quickly by protecting your operators from bad weather and getting more working hours from your "Caterpillar" equipment.

Sturdy Campbell cabs are constructed of heavy gauge steel with full visibility all around through rubber-mounted safety glass windows. Each cab is custom-built for a specific model in the entire line of "Caterpillar" tractor, making it easy to attach and snug fitting.

For full information, contact your "Caterpillar" dealer or write direct.



Wauconda, Illinois

CAMPBELL DETACHABLE CAB CO.

For more facts, circle No. 477

CONTRACTORS AND ENGINEERS



Power-steering system for heavy-duty tractor

A new power-steering system for the Caterpillar D8 tractor is announced by Rivinius, Inc.

According to the company, the unit not only reduces operator fatigue, but provides positive engagement or disengagement of the steering clutches. In addition, it permits the tractor to be turned at one speed, and sometimes two speeds, faster. The tractor is instantly stopped by pulling both hydraulic control knobs back. Releasing the knobs returns them to the normal, engaged-clutch positions.

The system consists of a double hydraulic cylinder connecting to both steering clutch adjusting rods, a heavy-duty control valve, Vickers hydraulic pump, plus reservoir, hoses, buckets, and hardware.

For further information write to Rivinius, Inc., Dept. C&E, 406 S. Darst St., Eureka, Ill., or use the Request Card at page 18. Circle No. 190.

Hand-carried 2-way radio has tubeless receiver

A hand-carried 2-way radio featuring a completely transistorized receiver is announced by the General Electric Co.

The unit is offered in a 25 to 54-mc low-band model, and a high-band model engineered for use up to 200 mc. Lightweight and compact, it is said to be extremely sensitive (0.4 microvolts), important in remotely located areas where reception is normally poor.

According to the manufacturer, transistors are the plug-in type, and



may be removed without unsoldering. All tuning points and components are readily accessible.

For further information write to the General Electric Co., Communication Products Dept., Dept. C&E, Electronics Park, Syracuse 2, N. Y., or use the Request Card at page 18. Circle No. 146.

The hydraulic control knobs are shown here at the operator's fingertips, providing positive "in or out" control of the D8's steering clutches. This Rivinius power-steering system reportedly permits faster speeds, with less fatigue.

Suitable for post-hole digging, as well as placing poles for guardrail fencing, this Sterling Model B earth-boring machine incorporates a 2½×2½-inch 17-foot digging bar, although bars up to 25 feet in length are available. Other features include a larger working barrel, permitting more pressure hydraulically; heavier ring and pinion gears; and a larger, heavier aluminum tube pole setter. For further information write to the Wyoming Valley Equipment Division, Dept. C&E, 714 Wyoming Ave., Kingston, Pa., or use the Request Card at page 18. Circle No. 89.



FARRELL-CHEEK Wire Rope Fittings

...FOR LONG
DEPENDABLE
SERVICE!



CHOKER HOOKS
STANDARD AND TRAVELING
VERSATILE SNATCH
BLOCK SOCKETS
IMPROVED WEDGE
TYPE SOCKETS
STANDARD TYPE
SOCKETS

ALSO YOUR SOURCE FOR
"Cable-Saver"
SHEAVES



F85 ALLOY AND
CARBON ELECTRIC
FURNACE STEELS



Important
..... All sizes of
heavy duty wire rope
fittings are in stock
for shipment within
48 hours after receipt
of your order!

WRITE TODAY FOR CATALOG NO. 22

**FARRELL-CHEEK
STEEL COMPANY**
SANDUSKY, OHIO, U.S.A.

BUCKETS • SPROCKETS • CHAIN • WHEELS • GEARS • SHEAVES • CABLE
FITTINGS • BAR BENDERS, CUTTERS • R. R. CASTINGS • FIRE TOOLS, ETC.

For more facts, circle No. 478

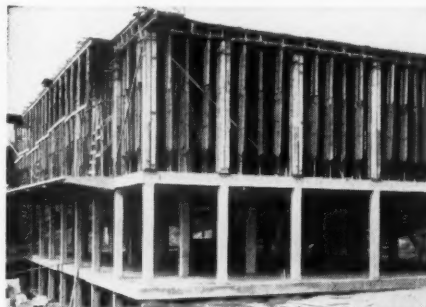


"No Added
Costs"

with

Rooshors

The ONE-MAN SHORE



Some types of form supports require special equipment and more labor to install, adjust and remove. Costs climb and profits drop.

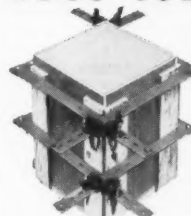
ROOSHORS ARE A ONE-MAN OPERATION

Rooshors require just one man to install, adjust and remove. There's no chance of support failure or tricky camber adjustments to make. Easy to transport, handle and store, contractors know Rooshors are more dependable and useful for all shoring requirements.

COMPARE THE COST AND VERSATILITY

Rooshors are used for interior and exterior beam shoring, heavy beams, fire walls, slab, high story shoring, wall bracing, buggy runs, etc. They're economical too, to rent or buy.

ROOS COLUMN CLAMPS



- Speed the clamping of columns.
- Automatically square the column forming.
- No parts to come loose or lose.

BAKER-ROOS, Inc.
P. O. BOX 892 • INDIANAPOLIS 6, INDIANA



FREE
LITERATURE
Write for Bulletin
No. 258

BAKER-ROOS, Inc. C&E
P. O. Box 892, Indianapolis 6, Indiana
Gentlemen: Send your literature on Rooshors and
Roos Column Clamps without obligation.

Name: _____
Organization: _____
Address: _____
City: _____ State: _____

For more facts, use coupon or circle No. 479

LIMCO
Heavy - Duty
AUTOMOTIVE
ENAMELS

**COLORS FOR ALL
TRUCKS AND
EARTHMOVING
EQUIPMENT**

- QUICK DRYING
- RUGGED DURABILITY
- ALL WEATHER PROTECTION
- PERMANENT NON-FADE COLORS
- RICH, HIGH GLOSS

Send For Free
Color Card and
Manual—Listing
over 300 Original
Equipment Colors!

ATTENTION DISTRIBUTORS!!

MANY ATTRACTIVE TERRITORIES STILL OPEN. Here is an opportunity to increase your earnings with this reputable, quality line. All Colors, — Repeat Sales, — High Profits.

LIMBACHER PAINT & COLOR WORKS, INC.

Dependable Automotive Finishes Since 1882.

515 Homestead Avenue, Mt. Vernon, New York

For more facts, use Request Card at page 18 and circle No. 480

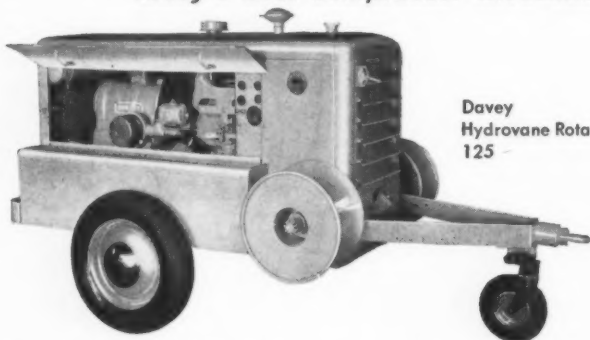
design simplicity... accessibility

**50%
fewer working
parts**



make the
Davey Hydrovane Rotary

today's best compressor investment!



Davey
Hydrovane Rotary
125

Take one quick glance at the new Davey Hydrovane Rotary. You'll note there are no complicated pipes, pulleys, tubing or plumbing.

Every part is readily available for inspection. Daveys can be serviced by any mechanic.

No special tools—only pliers, wrench and screwdriver are needed.

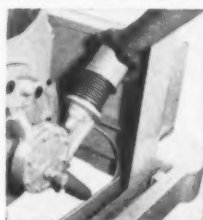
Before you buy—see Davey. 50% fewer working parts means greater operating efficiency, reduced maintenance expense, longer life.

AA-7059

UNMATCHED ACCESSIBILITY



Oil separator, relay valve, filter, shaft and pump are "easy-to-get-at".



It's a cinch to remove oil filter cover for cleaning.

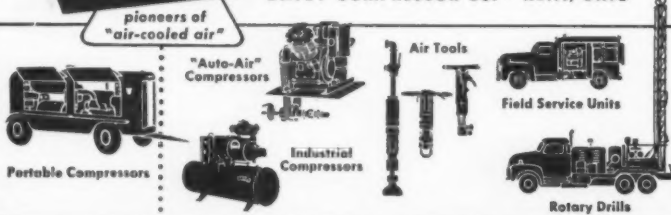


Segmented rotor vanes can be easily inspected or replaced in the field...in minutes.

DAVEY

Ask for Bulletins E-267 and 268!

DAVEY COMPRESSOR CO. • KENT, OHIO



For more facts, use Request Card at page 18 and circle No. 481

Product Parade

25-ton air-motor jack features easy portability

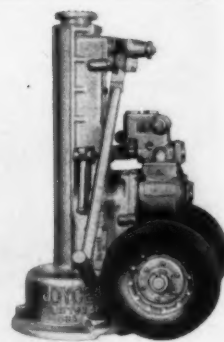
A 25-ton-capacity jack is offered by the Joyce-Cridland Co.

Termed the 1725-R, the jack is equipped with a trundling handle and large semipneumatic tires for easy portability. Power is provided by a heavy-duty Ingersoll-Rand air motor.

The jack is available with a toe lift that can be quickly slipped into place, increasing efficiency in lifting loads too low for the jack's standard lifting cap on top of the piston.

The jack also features high efficiency spur gearing, antifriction bearings, pressure lube fittings, automatic shutoff at top and bottom of rise, and positive safety controls. It has a 28-inch closed height, 18-inch piston rise, and weighs 245 pounds.

For further information write to



the Jack Division, Joyce-Cridland Co., Dept. C&E, 2027 E. First St., Dayton 3, Ohio, or use the Request Card at page 18. Circle No. 55.

New vibratory compactors require single operator

Two self-propelled one-man vibratory compactors are announced by the Master Vibrator Co. Available in two sizes, the units are designed to handle many soils including most silts, sand, gravel, rock, and hot or cold asphaltic mixes. According to the company, they can easily produce 90 to 100 per cent standard or modified Proctor densities.

The Master C-12 is easily portable, weighing only 236 pounds. It is powered by a Wisconsin ACN engine developing 3.5 horsepower, and has a compacting force of 2,360 1-ton blows per minute. Equipped with semipneumatic wheels, it has a forward speed of 20 to 45 fpm. It can be used with shoes in sizes of 12, 18, or 24 inches, or a special asphalt water



Lima Roadpacker owned by N. H. Garman & Bros., Inc., Reading, Pa. Shown working on highway widening job on U. S. 22, near Harrisburg, Pa. Work involved widening outer strips of 4-lane highway by 33-in. The trench, 9-in. deep, was first lined with a 1½-in. cushion course of screenings. The entire 9-in. lift of 4-in. stone was then tightly keyed in two passes of the Roadpacker. It took only two applications of dry screenings to fill the voids.

"LIMA ROADPACKER DOES GREAT JOB"

says H. S. Garman

"We were looking for a better compactor," says Harold S. Garman of N. H. Garman & Bros., Inc., paving contractors of Reading, Pa., "and we really found it in the Lima Roadpacker. Before we made the purchase, we tried out the other leading makes. The Roadpacker proved to be the fastest machine of the lot, and did a better job of compacting to the state's tough specs. On one job we compacted to 97% of the solid rock weight.

"To get real speed on the job (picture above) we used the widening attachment, which permits two shoes to be hooked up one behind the other. This was very successful and allowed us to finish the operation in record time. Recently, using the complete set of six shoes, we set what we think might be another record when we compacted over 2200 tons of aggregate in an 8-hr. shift. For my money, the Lima Roadpacker does a great job."

Get all the facts on the new Lima Roadpacker—write for free bulletin and see your local distributor

LIMA Construction Equipment Division, Lima, Ohio
BALDWIN • LIMA • HAMILTON

Shovels • Cranes • Draglines • Pultshovels • Roadpackers • Crushing, Screening and Washing Equipment



For more facts, use Request Card at page 18 and circle No. 482

CONTRACTORS AND ENGINEERS

Use the

Request Cards

Between

Pages 18 & 19

To Obtain

Further

Information

or Printed

Matter on

Any Product

Advertised

or Described

Editorially

in This

Issue

and Co.,
erton 3,
t page

table,
pow-
ne de-
has a
blows
semi-
rward
used
or 24
water

king
ning
th a
htly
ings

ture
ach-
o be
This
d us
me.
t of
ight
om-
gate
the
ob."



Use the
Request Cards
Between
Pages 18 & 19
To Obtain
Further
Information
or Printed
Matter on
Any Product
Advertised
or Described
Editorially
in This
Issue

plate
stick

An

An
C. C.
well
type
these
noun
Corp
Th
amet
anch
inch
stran
mont

HO

THE CO
El Paso
WICKWIR
PI

JUNE,



plate which prevents asphalt from sticking to the bottom of the shoe.

The Master C-36 is a larger unit, weighing 435 pounds. It features a Wisconsin BKN engine developing 4.2 horsepower, and a forward speed of 20 to 70 fpm. Delivering a compacting force of 2,300 1½-ton blows per minute, it can be used with shoes in sizes of 24, 30, or 36 inches.

These new vibratory compactors are said to be easy to maneuver, and permit compacting against abutments, in trenches, and in other working areas where space is limited.

For further information write to the Master Vibrator Co., Dept. C&E, 1752 Stanley Ave., Dayton, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 109.

Announce improvements in prestressing grips

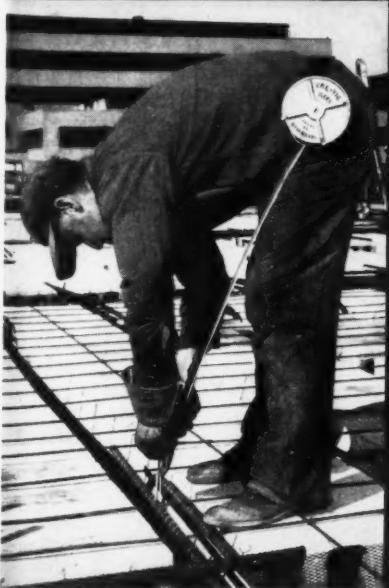
An addition to the line of Europa C. C. L. prestressing anchor grips, as well as the use of a new, improved type of steel in the manufacture of these anchor grips, has been announced by International Prestressing Corp., U. S. distributor for the line.

The new grip is for 6/10-inch-diameter 7-wire strand. Larger sizes of anchor grips, including those for 1-inch and 1½-inch-diameter 19-wire strand, will be available within a few months.

An addition to the line of Europa-type of steel recently introduced in England is now being used in the manufacture of the entire line of anchor grips. It is said to represent a considerable improvement over steel previously used in these products.

For further information write to International Prestressing Corp., Dept. C&E, P. O. Box 27082, Los Angeles 27, Calif., or use the Request Card at page 18. Circle No. 184.

HOW TO "BELT" TIE-WIRE PROBLEMS



When workers use CF&I Annealed Cal-Tie Wire in the handy, belt-borne dispenser, the weight and worry of clumsy shoulder coils is eliminated. There are no loose wire ends—hence no danger of facial scratches or costly eye injuries.

With this modern method of carrying re-bar tie wire, both hands are free—wire can't kink, tangle or catch on protruding objects, thus work in close quarters is easy and safe.

Your workers will like the convenience and safety of Cal-Tie Wire and you will appreciate its efficiency and economy. Cal-Tie Wire Coils weigh approximately four pounds and the wire is available in 14 through 20 gage. Why not get full details now from the nearest sales office listed below.

CF&I CAL-TIE WIRE

THE COLORADO FUEL AND IRON CORPORATION 5290

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Ft. Worth • Houston • Kansas City • Lincoln (Neb.) • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Francisco • San Leandro • Seattle • Spokane • Wichita
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia • CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg

For more facts, use Request Card at page 18 and circle No. 483

For more facts on these products, circle the indicated number on the Request Card at page 18.

SWENSON SPREADERS Speed Sealcoating!

Spreads Salt or Chloride for DUST CONTROL or SOIL STABILIZATION

write for complete information

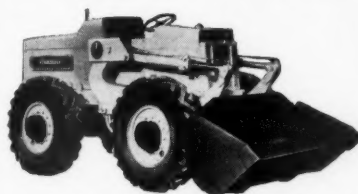
SWENSON SPREADER & MFG. CO.
Lindenwood, Illinois



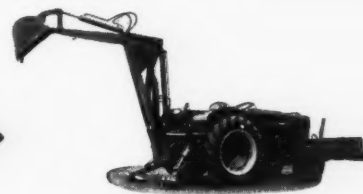
For more facts, use Request Card at page 18 and circle No. 484

MARVEL SYNCLINAL FILTERS Are Standard Equipment

Illustrated below are a few but a representative group of the various types of heavy Road Building and Construction equipment on which the manufacturers install MARVEL SYNCLINAL FILTERS as standard equipment.



"PAYLOADER" TRACTOR-SHOVEL
Model HH
The Frank C. Hough Co. Libertyville, Ill.



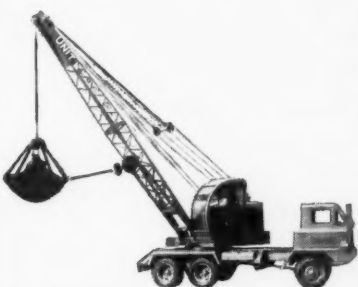
PIPPIN EXCAVATOR and
ANGLING BULLDOZER
Pippin Construction Equip. Inc.
White River Junction, Vt.



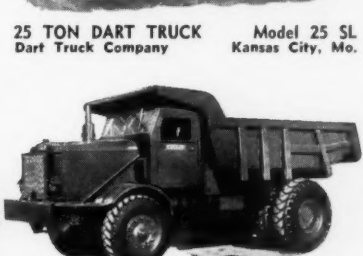
FRONT END LOADER
Ottawa Steel Products Ottawa, Kans.



25 TON DART TRUCK Model 25 SL
Dart Truck Company Kansas City, Mo.



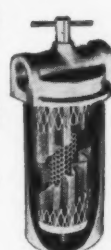
UNIT CHALLENGER ¾ YARD EXCAVATOR
Unit Crane & Shovel Corp. Milwaukee, Wis.



22 TON EUCLID TRUCK Model TD
Euclid Road Machinery Co. Cleveland, Ohio



Sump Type
(Cutaway)



Line Type
(Cutaway)

MARVEL SYNCLINAL FILTERS are designed for efficient filtration of hydraulic oils and to provide dependable protection to the inner mechanisms in all hydraulic and other low pressure circulating systems. They meet J.I.C. Standards.

EASY TO CLEAN

Sturdily constructed to give long and trouble-free service—yet are easily disassembled, thoroughly cleaned and reassembled in a matter of minutes. Line type operates in any position and may be serviced without disturbing pipe connections.

A SIZE FOR EVERY NEED

Available for either sump or line installation in capacities from 5 to 100 G.P.M. Choice of Monel mesh sizes range from coarse 30 to fine 200.

IMMEDIATE DELIVERY!

For further information, write, wire, phone or use coupon below

MARVEL ENGINEERING COMPANY

7227 N. Hamlin Ave., Chicago 45, Ill., Phone: JU 8-6023

Catalogs containing complete data available on request

Name
Address
City State

For more facts, use coupon



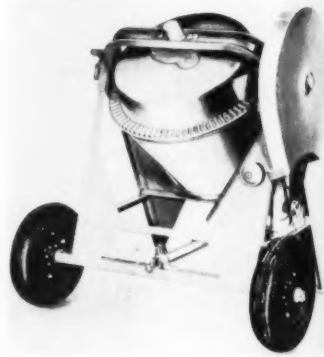
The backhoe attachment on this Speed Swing loader digs to a depth of 8 feet 6 inches, and reaches to 12½ feet in front of the tires. It has an 11-foot loading height.

Small concrete mixers mounted on skids, wheels

The Western Equipment Division of Douglas Motors Corp. announces its new Economy line of concrete mixers.

Available in 2-cubic-foot and 3-cubic-foot sizes, and mounted on skids or wheels, the mixers are offered in both side and end-discharge models, with a choice of gasoline or electric power. All machines are equipped with cast semi-steel ring gears, and have sturdy welded-steel construction.

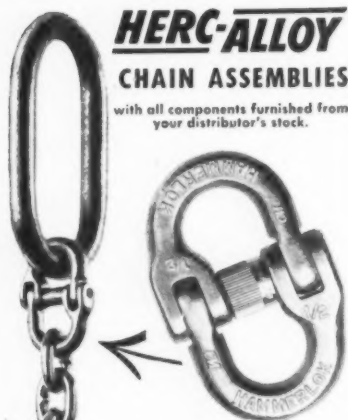
For further information write to the Douglas Motors Corp., Western Equipment Division, Dept. C&E, 1234 N. 62nd St., Milwaukee 14, Wis., or use the Request Card at page 18. Circle No. 90.



MAKE YOUR OWN

HERC-ALLOY CHAIN ASSEMBLIES

with all components furnished from your distributor's stock.

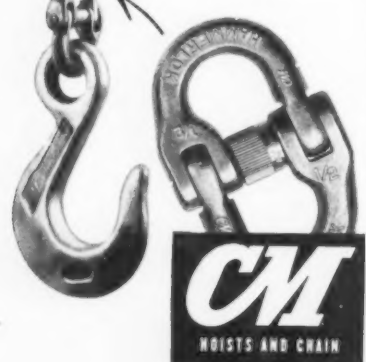


CM

Hammerlok® COUPLING LINK

- NO PEENING
- NO WELDING
- Hammerlok is made of alloy steel... is stronger than Herc-Alloy chain... is thoroughly field tested.
- Write for literature or ask your industrial distributor about Hammerlok.
- Made by the makers of Herc-Alloy... the original alloy steel chain.

**COLUMBUS McKINNON
CHAIN CORPORATION**
TOWANANDA, NEW YORK
DISTRICT OFFICES: NEW YORK
CHICAGO • CLEVELAND
In Canada: McKinnon Columbus Chain
Limited, St. Catharines, Ontario



For more facts, circle No. 486

Backhoe attachment adds to loader versatility

The Pettibone Mulliken Corp. announces an 8-foot backhoe attachment with two bucket capacities for use with its Speed Swing loader. The 18-inch bucket has a ¾-cubic-yard capacity; the 24-inch bucket, a ½-cubic-yard capacity.

The unit's digging depth is 8 feet 6 inches, and it has a surface reach of 12 feet 6 inches from the front of the tires. The loading height, from tires, is 11 feet.

The Speed Swing has a 180-degree boom swing—90 degrees right and left.

For further information write to the Pettibone Mulliken Corp., Dept. C&E, 4700 W. Division St., Chicago 51, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 96.

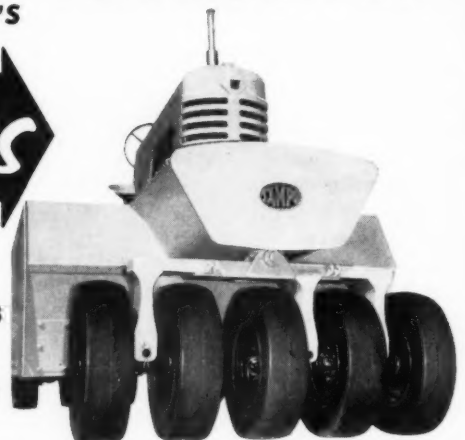
For further information on any product described in this section, circle the indicated number on the Request Card at page 18.

FASTER PRODUCTION!

WITH TAMPO'S
GREAT,

NEW
SP-11S

- ASPHALTIC MATS
- SEAL COATS
AND SCREENINGS
- STABILIZED SOILS
- EMBANKMENT AND
FLEXIBLE BASE



88 inch rolling width, torque converter, power operated reversing clutches and speeds to 22 m.p.h. make the Tamco SP-11S the most efficient black top roller. Seal coat rolling at 12 m.p.h.—keep up with modern spreaders. Write for latest bulletin.



MANUFACTURING COMPANY

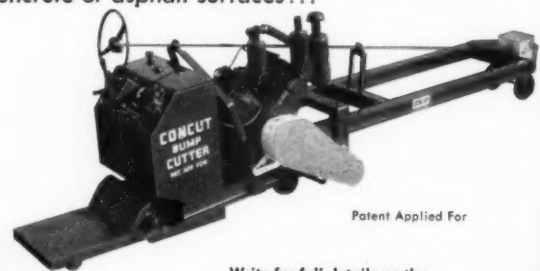
DEPT. 5 • P. O. BOX 2340 • 1146 W. LAUREL ST.
SAN ANTONIO, TEXAS • PHONE: PE-3-9171

For more facts, use Request Card at page 18 and circle No. 487

The revolutionary machine that eliminates bumps in concrete or asphalt surfaces...

CONCUT Precision BUMP CUTTER

You can plane concrete or asphalt surfaces to 1/8" or less deviation in 16' with the amazing new CONCUT BUMP CUTTER. This machine also removes old paint markings from streets, highways and airfields, removes accumulations of old rubber from airfields, and planes bridge decks. Cutting head is composed of diamond blades which may be adjusted to vary texture of finished slab. Operates at a cutting speed up to 100 feet per minute.



Patent Applied For

CONCUT

Write for full details on the
CONCUT Precision BUMP CUTTER

... the fast, economical method of surface planing

JOINTMASTER SAWING MACHINE

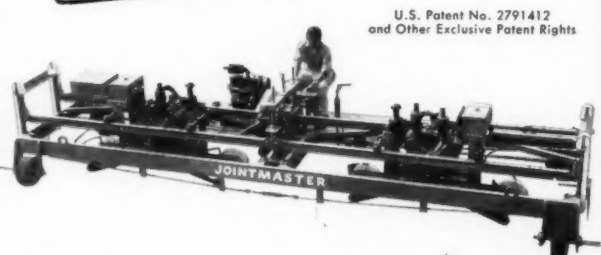
The fastest, most economical machine for those big airbase and highway joint sawing jobs. The JOINTMASTER has been used the world over on highways and U.S. Army and Navy Bases. 12' and 24' models available. Machines feature multiple blade up-cutting action for increased blade efficiency and long life.

Write for Catalog No. 20 showing the complete line of CONCUT Sawing Machines and CONCUT Blades.

Concut sales, inc.

General Offices and Factory

1845 NORTH BELCROFT AVE. • EL MONTE, CALIFORNIA
Phone Gilbert 3-1741



U.S. Patent No. 2791412
and Other Exclusive Patent Rights

The JOINTMASTER saves time and money on every job because ... it eliminates the need for marking transverse joints; it moves faster from joint to joint; and it cuts faster because it uses 2 or 4 blades instead of one. The JOINTMASTER may be easily transported on the highway. Write for detailed specifications today.

For more facts, use Request Card at page 18 and circle No. 488

The 79½-inch×16-foot platform of this tilt-bed equipment hauler tilts at a 12-degree angle for loading, then pivots and self-locks level for transporting.

New tilt-bed trailer self-locks for transport

A 6-ton tilt-bed trailer for light and medium equipment is announced by Spencer-Safford Loadcraft, Inc.

The 12-degree tilt of the 79½-inch×16-foot platform of the trailer makes it easy to drive equipment onto the bed, which pivots and self-locks into a level transport position.

The double-pivot rocker-beam tandem assembly, with individual sus-

pension on each side of the trailer, eliminates springs and axles, and permits maximum under-bed clearance. It also gives a smooth ride and keeps the load level over rough terrain, according to the manufacturer.

For further information write to Spencer-Safford Loadcraft, Inc., Dept. C&E, Augusta, Kans., or use the Request Card at page 18. Circle No. 79.



Masonry material handler travels under own power

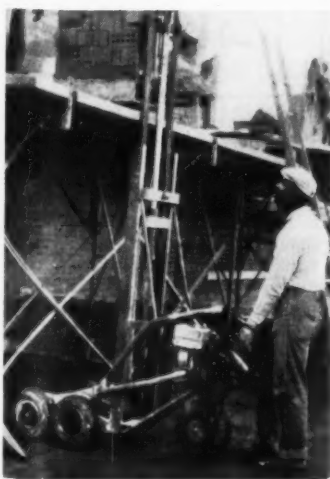
The West Brick Buggy Corp. announces its motorized Half Hi-Lift brick buggy for moving palletized or packaged masonry and similar materials.

The new unit has a 3-mph ground speed, and is said to lift hydraulically a recommended capacity load of 600 pounds to a maximum height of 7 feet 6 inches in 15 seconds. Power is provided by a Clinton 4-hp air-cooled engine. The hydraulic pump, rated at 1 gpm at 2,400 rpm, is gear-driven, and is operated by a single handle control. Twenty-three-inch forks are easily adjusted for any pallet opening from 4 to 18 inches, according to the manufacturer.

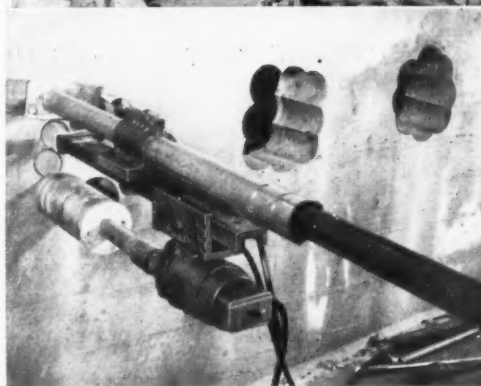
The machine's motorcycle-type throttle handle grips govern speed, with a dead-man control automatically stopping and braking the unit when the operating handles are released.

The unit's over-all dimensions are: 6 feet high with lift mast retracted, or 11 feet to the top of the backstop with the mast extended; 29½ inches wide; and 5 feet 6 inches in length.

For further information write to the West Brick Buggy Corp., Dept. C&E, 4310 Mayfield Road, Cleveland 21, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 57.



The motorized Half Hi-Lift brick buggy has a 3-mph ground speed. Hydraulic power reportedly lifts a 600-pound load to a maximum height of 7 feet 6 inches in 15 seconds.



TRUCO DOES IT AGAIN!

SLASHES COST IN CUTTING THROUGH HARD 12" CYCLOTRON WALL AT WASHINGTON UNIVERSITY

JOB: Cut four 14" openings through cyclotron wall to admit 12" pipes for storage of radioactive materials.

TOOLS: Truco Model C Portable Drilling Machine with 350 rpm motor and 6" Truco Diamond Drill Bits. Because of restricted space, machine was removed from its base and jacked between walls, providing rigidity and leverage for drilling. To shield workers from radioactivity, walls are a special pour which includes Meramec River gravel, making cutting tough. Using a 6" bit (instead of 14" O.D.) and drilling overlapping holes cut diamond bit cost in half. Total drilling time was only three days. Technical help was provided by Ray Martin Co. of Kirkwood, Mo., St. Louis area distributor for Truco products.

Truco unit is portable by one man; designed for high speed drilling in practically any location. Wired for 10 V, 60 cycles or less. Air motors for explosive conditions. Send for new catalog and name of nearest distributor.

Top: Cyclotron wall is in a hallway, space is very restricted. Note cores in foreground. *Bottom:* Making big hole by over-lapping small holes cut diamond bit cost 50%.

TRUCO MASONRY DRILLING DIV. WHEEL TRUEING TOOL CO.

41-3200 W. Davison Ave. • Detroit 38, Michigan

For more facts, use Request Card at page 18 and circle No. 489

THE MORSE-STARRETT WIRE ROPE CUTTER



Cutting capacities
up to 1 inch,
1-1/16 inch,
and 1-1/2 inch.

FAST

Especially designed cutting blade and dies of the finest steel assure fast cutting action.

EASY

Anyone can operate it. The hammer principle eliminates any special skill requirements.

SAFE

The enclosed cutting blade locked in the body of the cutter assures perfect safety.

PORTABLE

Models for tool kit or stationary operation. Made in three sizes.

SEE YOUR DEALER OR WRITE TO
MORSE-STARRETT PRODUCTS COMPANY
1204 - 49th AVENUE OAKLAND 1, CALIFORNIA

For more facts, circle No. 490

A Real Money Maker....



Bending five 151/2" reinforcement bars at the
Ceco Steel Products Corp., Broadview Plant on
a No. 82 Wallace Bender

2 SIZES

No. 47 - 1½" BAR
No. 82 - 2½" BAR

BE IN STEP WITH YOUR
COMPETITION

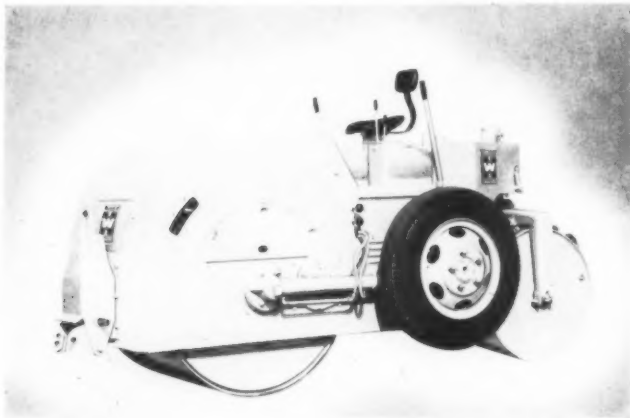
WALLACE SUPPLIES Mfg. Co.
1804 W. Cernalia Avenue
Chicago 13, Illinois

SOME USERS

	No. of Machines
Morrison-Knudsen Construction Co.	3
U. S. Steel Supply Co.	13
Kaiser Engineers, Inc.	1
F. H. McGraw & Co.	4
Sheffield Steel Corp.	7
Ceco Steel Products Corp.	4
Republic Steel Corp.	15
Pollak Steel Company	4

JOIN THEM - LOWER YOUR COST
WRITE TODAY!

For more facts, circle No. 491



In three simple steps this Huber-Warco 4 to 6-ton tandem roller converts to transport position. The retractable wheels and towing hitch are operated by a power hydraulic system.

Retractable wheel roller for maximum portability

The Huber-Warco Co. announces a new 4 to 6-ton retractable wheel tandem roller.

According to the company, in three simple steps the machine is converted from working to transport position for fast movement from job to job. The retractable wheels and towing hitch are operated by a power hydraulic system.

The machine has a tail-shaft governor, combined with a torque converter and water-cooled engine. Other features include a foot-operated disk-type brake located on the

transmission output shaft, variable speed steering valve, and a 34-inch-diameter guide roll.

Because of the balanced weight design, only 1,280 pounds ride on the towing vehicle. From 17 to 21 per cent less weight on the hitch results in better towing action at higher speeds, the company points out.

For further information write to the Huber-Warco Co., Dept. C&E, Box 501, Marion, Ohio, or use the Request Card at Page 18. Circle No. 159.

Portable water coolers are sanitary, rustproof

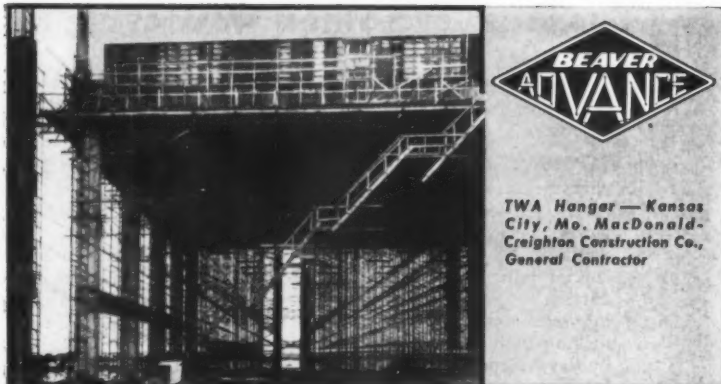


A hot-dipped galvanized Arctic Boy water cooler is available from the Schlueter Mfg. Co.

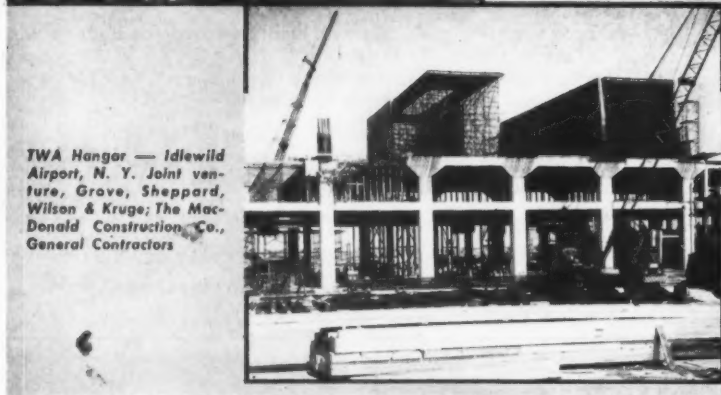
The interior of the cooler is dipped in molten zinc after it is formed. Thus, the company states, all seams are sealed, and the product is completely rustproof, leakproof, and sanitary.

These coolers are also lined with Sparkleen plastic, said to keep the interior clean, odor-free, and free of foreign taste, indefinitely.

Heavy-duty and stainless-steel



TWA Hanger — Kansas City, Mo. MacDonald-Creighton Construction Co., General Contractor



TWA Hanger — Idlewild Airport, N. Y. Joint venture, Grove, Sheppard, Wilson & Krueger; The MacDonald Construction Co., General Contractors

"REPEAT PERFORMANCE BY COMMAND"

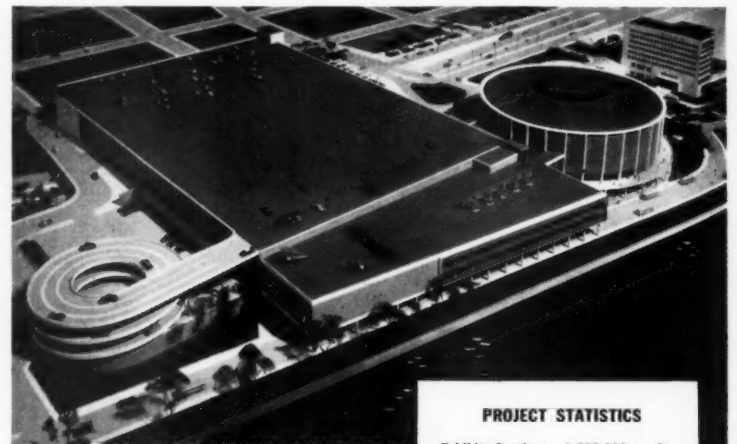
Detailing the reasons for superior scaffold performance is easy enough to do, but isn't it easier to experience exceptional performance again and again on your own construction jobs?

The ADVANCE scaffold shoring applications illustrated are for TWA hangars, but at widely separated geographical locations. Photo A is a project at Kansas City; Photo B is a similar hangar under construction at New York's Idlewild Airport. The fact that the ADVANCE Shoring System was used at both locations is not mere coincidence. Here's what job superintendents report:

- ADVANCE scaffold assemblies faster — replaces as many as 12 wood or steel shores that require twice as much time to place.
- ADVANCE scaffold towers are self-supporting — eliminate additional lateral bracing — greatly reduce nailing requirements . . . afford more freedom of worker movement and assure maximum safety.
- ADVANCE Roller Assemblies enable speedy removal and relocation of forms from one pour area to another with substantial savings in manpower.

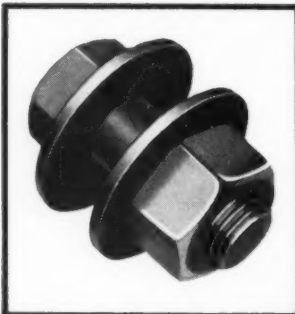
These and many more reasons justify "REPEAT PERFORMANCE BY COMMAND." Outstanding value makes ADVANCE the accepted name for quality scaffold, engineering service and on-the-job PROFITS!

Beaver-Advance CORPORATION
Ellwood City, Pennsylvania



A PLAN FOR THE FUTURE
WE HAVE A PART IN TODAY!

**A.S.T.M. A325-55T*
WASHERS**
when you need them!



Our ability to produce and deliver hard, flat and concentric washers made of prime stock to exact A.S.T.M. specifications has given us the privilege of taking part in the construction of Detroit's vast new Civic Center project.

Our reputation as a source for high strength construction washers on a direct basis to contractors and steel fabricators is growing every day. Standard sizes stocked for immediate delivery are: 1/2", 3/8", 3/4", 7/8", 1", 1 1/8", and 1 1/4". Save time and money, order high strength construction washers direct from the manufacturer.

*Hardness of 68 to 75 Rockwell A, and carburized to a minimum depth of .015". Quenched and tempered (non-carburized) washers have a hardness of 35 to 45 Rockwell C.

Write today for our newest price list on ASTM washer sizes available for immediate shipment.

WHITEHEAD STAMPING CO.

1664 WEST LAFAYETTE BLVD., DETROIT 16, MICHIGAN

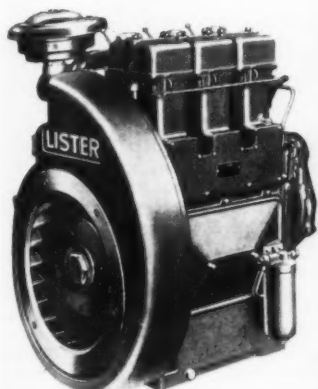


For more facts, use Request Card at page 18 and circle No. 493

CONTRACTORS AND ENGINEERS

British diesel engines made available in U. S.

R. A. Lister & Co. Ltd., England, announces its HA series of air-cooled diesel engines, to be distributed in the U. S. by Lister-Blackstone, Inc. The



HA2 and HA3 models, 2 and 3-cylinder units, respectively, develop 20 and 30 bar horsepower at 1,800 rpm.

All working parts and fuel-injection equipment are totally enclosed, yet easily accessible for maintenance. These are full diesel engines, and are said to be easily started by hand from either end of the engine. No pre-heating or priming is necessary after the initial run.

According to the manufacturer, the units are particularly suitable for pumps, generators, air compressors, conveyors, and hoists. Unified threads permit interchangeability of all working parts.

For further information write to Lister-Blackstone, Inc., Dept. C&E, 42-32 21st St., Long Island City 1, N. Y., or use the Request Card at page 18. Circle No. 175.

(Continued from preceding page)

models are furnished with Styrofoam insulation, paper cup dispenser lugs, and a heavy steel bottom band for extra support. Available in 2 to 15-gallon sizes, the coolers are fully corrugated for greater impact and damage resistance, have solid brass,

nickel-plated spigots, and the insets have rounded bottoms for cleanliness.

For further information write to the Schlueter Mfg. Co., Dept. C&E, 4616 N. Broadway, St. Louis 7, Mo., or use the Request Card that is bound in at page 18. Circle No. 68.

ROCKFORD



MORLIFE® CLUTCHES

Provide Easy Operation by Reducing Hand Lever Pull 50%

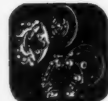
Compared to previous type clutch facings, Morlife® Clutch facings reduce hand-lever pull up to 50%. They assure positive engagement—with power-holding grip. Provide a degree of heat resistance and dissipation never before available. They give four times the durability for prolonging clutch life and extend the time between adjustments ten times as long. Let ROCKFORD clutch engineers show you how these new advantages will improve the operating ease and prolong the on-the-job life of your product.

SEND FOR THIS HANDY BULLETIN
Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER
314 Catherine St., Rockford, Ill., U.S.A.
Export Sales Borg-Warner International — 36 So. Wabash, Chicago 3, Ill.

CLUTCHES

For more facts, use Request Card at page 18 and circle No. 494



Small Spring Loaded



Heavy Duty Spring Loaded



Oil or Dry Multiple Disc



Heavy Duty Over Center



Power Take-Offs

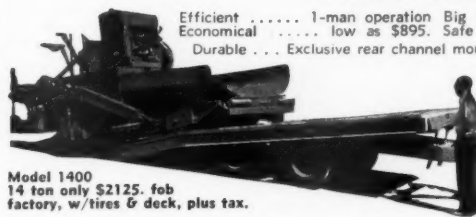


Speed Reducers

For more data on any item, circle indicated number on card at page 18.

WISCONSIN TILT TRAILER

CHOSEN BY COMPARISON



Model 1400
14 ton only \$2125. fob factory, w/tires & deck, plus tax.

Efficient 1-man operation Big capacity 3-16 ton
Economical low as \$895. Safe Wide Oak Deck
Durable Exclusive rear channel mounting, prevents tearing away.
8 extra braces inside frame.
Low loading angle
No blocks, skids, or ramps needed. All wiring enclosed.
Automatic Hydraulic Deck Control — "EASY UP" "EASY DOWN"

Write for details and name of dealer.

WISCONSIN TRAILER CO. 1949 N. 121st St., Milwaukee 13, Wis.

For more facts, use Request Card at page 18 and circle No. 495

HITS WITH A TON

Kelley

2400 TIMES A MINUTE

POWER TAMPER



Illustrated—
Model 18KT

Everywhere this season the Kelley Power Tamper is saving time and money for contractors. A massive eccentric-loaded rotor bangs this machine up and down with terrific force, compacting soil or blacktop into a dense, interlocked mass. Ruggedly-built yet easy to operate, the Kelley Power Tamper propels itself up to 60 feet per minute. It's ready-to-go. Two models to choose from: 18" wide shoe and 36" wide shoe. Fill out coupon now for more information.



POWER TROWELS



SPACE HEATERS



COMPACTOR POWER FLOATS



The Kelley Power Tamper is the perfect tool for packing down earth backfill to maximum density next to foundations, on road-widening jobs, around culverts and in pipeline trenches. Also for finishing blacktop driveways.



MACHINE DIVISION

The Wiesner-Rapp Co., Inc.
285 Hinman Ave. Buffalo 23, N. Y.

Please send us information on Kelley products.

NAME _____
STREET _____
CITY _____ ZONE _____ STATE _____

For more facts, use coupon, or Request Card at page 18 and circle No. 496

Product LITERATURE

For further information on any of the literature described in the following section, circle the designated number on the Request Card at page 18.

Construction ladders—a 36-page catalog describing and illustrating the Duo-Safety line of ladders for all types of construction work. Heavy-duty Model AS2H aluminum scaffold is featured. Sizes up to 58 feet in length are shown. Catalog 89-C.

Write to Duo-Safety Ladder Corp., Dept. C&E, 513 W. Ninth Ave., Oshkosh, Wis., or use the Request Card at page 18. Circle No. 183.

Drilling equipment—a bulletin describing the complete Brunner & Lay line of blast-hole drilling equip-

ment. Covers carbide drill bits, drill steel, couplings, adapters, extension steel, and other tools. Specifications; application data.

Write to Brunner & Lay, Inc., Dept. C&E, 2514 E. Cumberland St., Philadelphia 25, Pa., or use the Request Card at page 18. Circle No. 129.

Pneumatic conveyor systems—a bulletin describing the applications of Fuller pneumatic conveying systems designed for handling dry bulk materials. Photographs and drawings detail construction, and show various

stages of operation. Bulletin FK-26A.

Write to the Fuller Co., Dept. C&E, 124 Bridge St., Catasauqua, Pa., or use the Request Card at page 18. Circle No. 164.

Crane hook blocks—a bulletin describing the complete line of Max-Lift crane hook blocks. Includes the newest addition, a 35-ton block with a 39 1/4-inch over-all height. Engineering data and complete specifications.

Write to The Upson-Walton Co., Dept. C&E, 12535 Elmwood Ave.,

Cleveland 11, Ohio, or use the Request Card at page 18. Circle No. 156.

Rotary air drill—an illustrated bulletin on the Davey Model M-8A rotary air drill. Includes complete specifications and a detailed description of each equipment item included in the drill unit. Bulletin E-7025-2.

Write to the Davey Compressor Co., Dept. C&E, Franklin Ave., Kent, Ohio, or use the Request Card at page 18. Circle No. 70.

Crawler tractor—a booklet on the operating advantages and engineering features of the Allis-Chalmers Model HD-6 diesel-powered crawler tractor. Illustrated with numerous graphs and charts, close-ups of the tractor's principal components, and a cutaway view of the entire tractor. Specifications included. Catalog MS-1251.

Write to the Construction Machinery Division, Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 21.

Air-photo interpretation—a folder telling how air-photo interpretation provides essential soils and geological data for engineering projects. Also discusses the use of air-photo studies to locate construction materials, determine trouble areas, aid route location, and investigate excavation and foundation problems. Several examples of air-photo interpretation are shown.

Write to the Aero Service Corp., Dept. C&E, 210 E. Courtland St., Philadelphia 20, Pa., or use the Request Card that is bound in at page 18. Circle No. 75.

Scraper—a well illustrated catalog on the Model D Tournapull. Lists the construction and operating characteristics of the 9-cubic-yard 29.5-mph unit. Contains many on-the-job photos, as well as close-ups of main components.

Write to the LeTourneau-Westinghouse Co., Dept. C&E, 2301 N. Adams St., Peoria, Ill., or use the Request Card at page 18. Circle No. 73.

V-belts, hose, rubber-faced plate—a catalog describing the application in the construction industry of Gates V-belts, industrial hose, and rubber-faced plate. More than 50 illustrated case histories outline specific results obtained.

Write to the Gates Rubber Co., Dept. C&E, 999 S. Broadway, Denver 17, Colo., or use the Request Card at page 18. Circle No. 116.

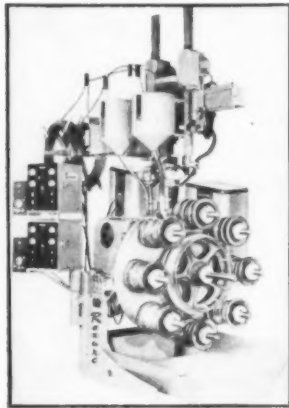
Tire care—an informative 42-page booklet on nine main factors, within the control of truck owners, determining the degree of service that can be received from truck tires. Also lists and describes the complete line of B. F. Goodrich truck tires; suggests safety rules to follow when servicing truck tires; and carries tables on load and inflation, weights and measures. Generously illustrated with photos, drawings, charts.

Write to the B. F. Goodrich Tire Co., Dept. C&E, 500 S. Main St., Akron, Ohio, or use the Request Card at page 18. Circle No. 71.

Tractors—a booklet stressing the versatility and economy of Caterpillar D7, D8, and D9 tractors. Photos and job stories illustrate the wide range of applications in which the units are used. Form D764.

Write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 59.

SPEED UP CRAWLER PARTS REBUILDING WITH *Rexarc* AUTOMATION



MS-8

Rexarc MS-8 Twin Head Tractor Roller and Idler Rebuilder

- Hard-faces both sides of rollers simultaneously
- Mounts 8 rollers and one idler at a time
- Write for free literature

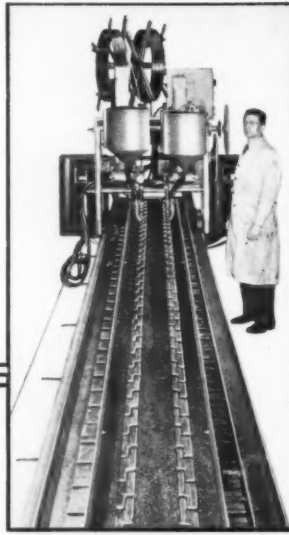
Rexarc RM-6 Twin Head Tractor Track Rebuilder

- Hard-faces both sides of track simultaneously
- Skips spaces between links
- Ready for rugged service

PREVENTIVE AND OPERATIONAL MAINTENANCE AT ITS FINEST

Manufactured by

THE SIGHT FEED GENERATOR COMPANY
WEST ALEXANDRIA, OHIO

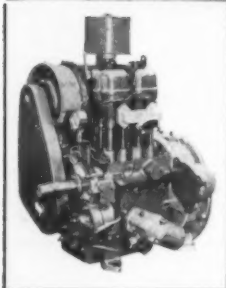


RM-6

For more facts, use Request Card at page 18 and circle No. 497



Powered by a Petter 12.5-hp PC2 engine



INTRODUCING A NEW LIGHTWEIGHT AIRCOOLED DIESEL ENGINE

The PC, an addition to the current range of Petter engines, is manufactured in 1, 2, 3 & 4 cylinders at a continuous speed of 3000 RPM and a horsepower rating of 6.25 per cylinder.

Now the right prime mover for concrete mixers, pumps, forklift trucks, dumpers, air compressors, cultivators, balers, combines, cranes, conveyors, refrigeration equipment and many other applications.

* * * * *

Air & Watercooled diesel engines 3-200 HP Generating Sets 1 1/2-120 KW
SHORT DELIVERY — EXCELLENT SERVICE FACILITIES

PETTER ENGINE DIVISION — BRUSH ABOE, INC.

34-14 58th St., Woodside, N. Y., DEfender 5-7100

For more facts, use Request Card at page 18 and circle No. 498

Pumps—literature on Gorman-Rupp Series 80 lightweight portable pumps. According to the brochure, these pumps prime at 30 feet, require no check valve, and feature straight-in suction.

Write to The Gorman-Rupp Co., Dept. C&E, 357 N. Bowman St., Mansfield, Ohio, or use the Request Card at page 18. Circle No. 5.

Calcium chloride—an illustrated pamphlet on spring maintenance of roads through the use of calcium chloride. Tells what to do with roads that have had calcium chloride in the past, and those that have not. Also contains application charts for each of the two different types of calcium chloride: regular and concentrated.

Write to the Calcium Chloride Institute, Dept. C&E, 909 Ring Bldg., Washington 6, D. C., or use the Request Card at page 18. Circle No. 123.

Portable power clearing tool—literature describing the construction and operating characteristics of the Hoffco Model H.D. Brushcutter. Illustrated with sketches and photographs; close-ups of major components. Also includes data on the Sawette chain-saw attachment.

Write to Hoffco, Inc., Dept. C&E, 411 N. Eighth St., Richmond, Ind., or use the Request Card at page 18. Circle No. 61.

Admixture for concrete—a bulletin on Protex dispersing agent, a water-reducing concrete admixture. Text is illustrated with photographs, as well as charts showing lower water requirements and higher strengths achieved through use of PDA.

Write to the Protex Division, Autolene Lubricants Co., Dept. C&E, 1331 W. Evans St., Denver 9, Colo., or use the Request Card at page 18. Circle No. 74.

Concrete vibrators, grinders—a catalog covering the WYCO line of concrete vibrators and grinders. Features two new one-man vibrators which permit the use of head sizes from 3/4 inch to 1 1/2 inches in diameter. Also shows the new form-cleaner attachment and hole-boring head for WYCO grinders, as well as the firm's Junior and standard electric and gasoline vibrators.

Write to Wyzenbeek & Staff, Inc., Dept. C&E, 223 N. California Ave., Chicago 12, Ill., or use the Request Card at page 18. Circle No. 99.

Base-paver attachment—an illustrated fact sheet describing the new Blaw-Knox Model P-160 base-paver attachment. According to the literature, the unit is designed for standard crawler-type tractors with sufficient power for its operation, and includes an exclusive oscillating screed and custom-built mounting hitch.

Write to the Construction Equipment Division, Blaw-Knox Co., Dept. C&E, 40 Charleston Ave., Mattoon, Ill., or use the Request Card at page 18. Circle No. 24.

Trenching machine—a catalog describing the Parsons Model 310 Trenchliner. Illustrations show the unit in action on pipeline, irrigation, construction, utility, drainage, and municipal jobs. Detailed assembly pictures also included.

Write to the Parsons Co., Division of Koehring Co., Dept. C&E, P. O. Box 431, Newton, Iowa, or use the Request Card at page 18. Circle No. 141.

Truck crane—a booklet describing the American 599T 40-ton-capacity truck crane. Charts show lifting capacities; traveling weights; working ranges as a dragline. Photographs, dimensional drawings. Special emphasis on the unit's swinging outrigger.

Write to the American Hoist & Derrick Co., Dept. C&E, 63 S. Robert St., St. Paul, Minn., or use the Request Card at page 18. Circle No. 58.

Diesel tractor—literature describing the International TD-18 diesel tractor. Covers all components of the machine, and is generously illustrated with photos and schematic drawings. Form CR-631-H.

Write to the International Harvester Co., Construction Equipment Division, Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 56.

Laminated timbers—an illustrated booklet on permanently bonded built-up timbers for all types of construction. Includes an evaluation of glued beams versus conventional I-beams, both in resistance to fire and in the maintenance of structural strength under high temperatures.

Write to the Chemical Division, Koppers Co., Inc., Dept. C&E, 801 Koppers Bldg., Pittsburgh 19, Pa., or use the Request Card at page 18. Circle No. 149.

Clearing blade—a folder describing the Rome K/G land-clearing blade that both shears trees and windrows. On-the-job photographs show the unit clearing, stacking, removing stumps, and ditching.

Write to the Rome Plow Co., Dept. C&E, P. O. Box 623, Cedartown, Ga., or use the Request Card at page 18. Circle No. 36.

Vibrating screens—a catalog on Syntron vibrating screens. Contains complete data, specifications on the firm's pulsating-magnet, concentric-action, unbalanced-pulley, and grizzly bar screens, as well as on screening feeders. Illustrated with photographs of typical applications and installations.

Write to the Syntron Co., Dept. C&E, 227 Lexington Ave., Homer City, Pa., or use the Request Card that is bound in at page 18 of this issue. Circle No. 49.

Use the Request Card at page 18 to obtain any of this literature.

Portable drill-steel grinder—literature describing the new Atlas Copco Model LSB-63 portable drill-steel grinder, said to feature compressed-air power. A photo sequence demonstrates the unit's operation.

Write to Atlas Copco Eastern, Inc., Dept. C&E, 610 Industrial Ave., Paramus, N. J., or use the Request Card at page 18. Circle No. 139.

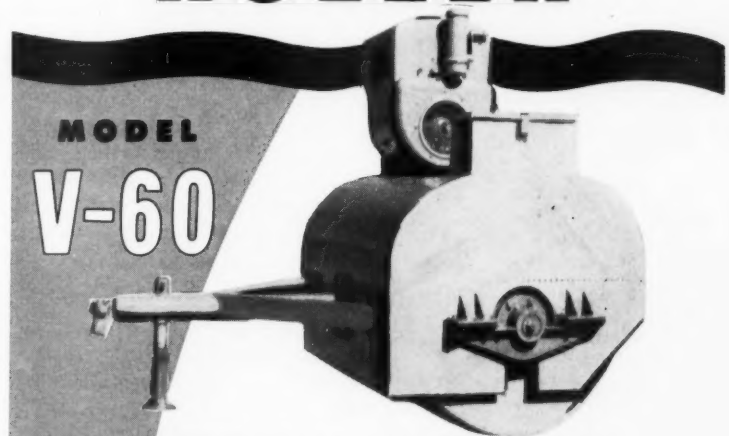
Wire-rope cutter—a parts replacement list for the Morse-Starrett hammer-type wire-rope cutter. Specifications and prices. Also contains data on the firm's wire-rope cable band. Illustrated with photographs, drawings.

Write to the Morse-Starrett Products Co., Dept. C&E, 1204 49th Ave., Oakland 1, Calif., or use the Request Card at page 18. Circle No. 165.

THE NEW CONCEPT IN VIBRATORY ROLLING



VIBRATING ROLLER



MODEL

V-60

Built-in variable amplitude — makes possible a wide range of vibrating force directly imparted through the face of the roller. Variable frequency controlled by the engine governor throttle, affords vibrations per minute suited to various types of materials being compacted. Lower vibration frequencies mean less wear and tear on the unit, greatly reducing maintenance problems — practically eliminating downtime.

OTHER QUALITY ITEMS IN THE BMCO LINE:



For Further Information,
Phone, Write or Wire

BROWNING MANUFACTURING CO.

111 HUMBLE AVE. • P. O. BOX 2707
WALNUT 3-4331 • SAN ANTONIO, TEXAS

BMCO AND ROCKBUSTER ARE COPYRIGHTED TRADEMARKS OF THE BROWNING MFG. CO.

For more facts, use Request Card at page 18 and circle No. 500

The Most Portable Water Cooler Available!



Flat back makes it
easy to carry



Flat back mounts
flush on truck!

Keep cool drinking water readily available anywhere on your job with a Parco Dispensit—finest water cooler on the market.

- Completely insulated — keeps water delightfully cool.
- Stainless steel inside — sanitary and easy to clean.
- Zinc coated exterior — aluminum enamel finish.
- Recessed spigot — can't be knocked off, easily removed for cleaning.
- Available in 3 sizes — 4, 6, and 8 gallons.

Contact Parco now for immediate delivery.

A few exclusive distributorships still available.

PARCO PRODUCTS

Pennsburg
Pennsylvania

For more facts, use Request Card at page 18 and circle No. 499



First units of the 10-mile-long "Payload Convoy West" pull out of the yard of The Frank G. Hough Co. at Libertyville, Ill., to start the 1,500-mile trek to Salt Lake City. There, Lang Construction Equipment Co. was host as the rigs were put through their paces for some 130 distributor representatives and a press group. All trucks are Internationals.

Distributor doings

"Payload Convoy West" spurs equipment sales

Ten-mile-long truck convoy delivers tractor shovels to dealers during spectacular trek across country

"Payload Convoy West", the largest known motor-truck caravan ever to leave the Chicago area, carried nearly 100 Hough Payloader tractor shovels, together with parts and attachments, on a dramatic six-day 1,500-mile trek from The Frank G. Hough Co. plant at Libertyville, Ill., across the Great Plains and the Rocky Mountains to Salt Lake City, Utah.

Planned as a stimulus to the general economy as well as a sales promotion scheme, the 10-mile-long convoy was viewed by thousands of

persons along the way. It was enthusiastically received at the overnight stops at Cedar Rapids, Iowa; North Platte, Nebr.; and Cheyenne, Wyo.; as well as at other cities and villages en route.

At the terminus of the convoy, Payloader distributors from 11 western states and two Canadian provinces gathered for a two-day meeting featuring sales presentations and on-the-job demonstrations of the rigs. More than 130 representatives of 27 distributors and a delegation from the press attended.



Torque wrench capacity doubled with new OTC e-x-t-e-n-s-i-o-n-s



The same pull gives **twice the torque** with new OTC torque wrench and extensions. Double the work range — have two torque wrenches — one small handy, one large powerful. Both accurate, easy to read.

Extension includes tubular steel adapter arm — add the box-wrench or ratchet-drive ends from complete OTC selection. No complex figuring needed—simply multiply dial reading (foot-pounds or inch-ounces) by two.



FULL LINE OF BOX-WRENCH AND RATCHET-DRIVE ENDS

Any OTC end fits on adapter arm . . . box wrenches from 3/4 to 3 1/2 inches; 3/4, 1 and 1 1/2 inch ratchet square drives; 3/4, 1, 1 1/2 inch fixed square drives; 15° and double-off-set box wrenches. Special drive ends can be built to your specification.

See your distributor or write



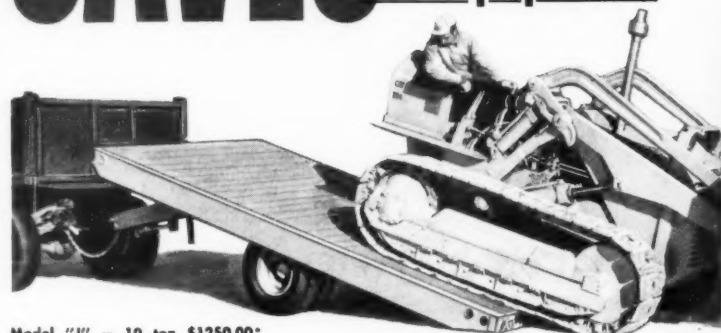
OWATONNA TOOL COMPANY

381 CEDAR STREET

OWATONNA, MINNESOTA

For more facts, use Request Card at page 18 and circle No. 502

SAVES...time between jobs! on equipment!



Model "J" — 10 ton \$1250.00*

MILLER Tilt-Tops' drive on loading!

Miller's big, oak decked platforms swing down . . . merge with the ground for the easiest . . . fastest drive on loading you'll find. With a MILLER Tilt-Top there's no need to bother with skids, cribbing or jacks . . . ONE man can tilt, drive on a rig . . . be off to the next job in less than TWO minutes! This faster, easier loading, plus easier backing and close quarter maneuverability . . . saves the bother and expense of larger more cumbersome trailers . . . so often impractical to use for "fast jump", job-to-job hauling. And MILLER Tilt-Tops' fast between job loading and hauling can often let you shuttle rigs back and forth between simultaneous job operations, help you save duplicating expensive equipment.

Whatever you haul . . . front end loaders, shovels, pavers, rollers or trenchers, there's a MILLER model to handle any rig from 4 to 15 tons, easier! faster! See these time saving, production boosting Tilt-Tops at your MILLER distributor today.

See your MILLER distributor or write for FREE literature to:

Miller
Tilt-Top Trailer Inc.

*F. O. B. Milwaukee, Wis.
Brakes and optional equipment extra
*Plus 10% Federal Tax

456-F S. 92nd Street, Milwaukee 14, Wisconsin

For more facts, use Request Card at page 18 and circle No. 503

CONTRACTORS AND ENGINEERS



The new Superior side-boom attachment is used by this Hough Payloader to lower a pipe into a trench. This was one of the attachments put through their paces for the group.



An HH Payloader with a Wain-Roy hydraulic hoe puts on a ditching demonstration for the group during the two-day meeting.

On the grounds of the Lang Construction Equipment Co., at Salt Lake City, the several Payloader models were put through their paces to demonstrate their digging, loading, and carrying capacities. The convoy carried a number of the track-type Model 12 Payloaders which are now in production, and this new model was demonstrated for the distributors in competition with other tractor shovels.

In addition to the crawler and rubber-tire tractor shovels, several new attachments were demonstrated. One

of these was the versatile Wain-Roy hydraulic hoe. Attached to the bucket arms of the Payloader, the hoe uses the loader's hydraulic system for power as it performs many trenching, backfilling, and related operations.

A new Superior hydraulic side-boom attachment for the HO Payloader was shown by The Superior Equipment Co., Bucyrus, Ohio. This attachment, designed especially for use with the rubber-tire Payloader, adapts the machine for pipe laying and other work commonly handled by

(Continued on next page)

TERRAPAC'S

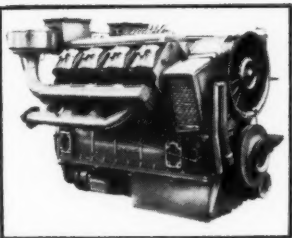
1600 vibrations a minute...a breeze for
DEUTZ AIRCOOLED DIESELS



Deutz Model A 2 L 514-2 cyl., 162 cu.in.

8,000,000 yards of sand fill were compacted at Griffith Air Force Base in Rome, N. Y. with 12 Vibro-Plus vibratory rollers. Only Terrapacs hit better than 100% density. Terrapacs proved their ability to do the job better with fewer passes, at less cost per yard.

Working 20 hours a day, the contractor ran Deutz Aircooled Diesels in compaction tests. Deutz Diesels have since been mounted on all the units. Deutz' reliability, reduced downtime and the quick availability of parts played an important part in the selection. Naturally, Deutz Aircooled Diesels eliminate all the usual problems connected with liquid-cooling—no radiators to break down, no hose connections and water pumps to spring leaks. Deutz Aircooled Diesels were also selected for their top operating efficiency at temperatures of up to 140°F. You'll find DEUTZ powering graders, earth-movers, shovels, concrete mixers and generator sets...doing construction's toughest job everywhere.



Deutz Model A 8 L 614-8 cyl.

Send for free information on
AIRCOOLED DEUTZ DIESELS
from 5 to 250 HP in
1, 2, 3, 4, 6, 8 and
12 cylinder models.

DIESEL ENERGY CORPORATION
82 BEAVER ST., NEW YORK 5, N. Y.

DEUTZ DIESEL ENERGY CORPORATION CE-8
82 Beaver Street, New York 5, N. Y.

I am interested in more details on use of the
DEUTZ AIRCOOLED DIESEL for the following purposes:

☐ INDUSTRIAL ☐ CONSTRUCTION ☐ DEALER
☐ OPERATOR

Name _____
Address _____
City _____ Zone _____ State _____

For more facts, use coupon, or Request Card at page 18 and circle No. 504

When the Job Calls for Concrete

...Call for **AIRPLACO** Equipment

EVERYTHING FOR
FASTER, EASIER,
MORE PROFITABLE
PLACEMENT OF CONCRETE

FOR AUTOMATIC PROPORTIONING, MIXING,
ELEVATING AND SCREENING

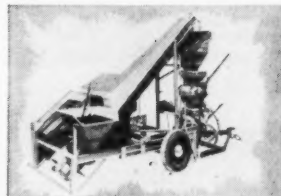
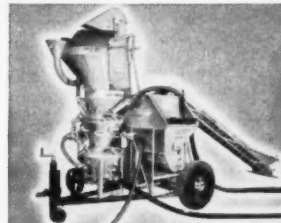
AIRPLACO MIX-ELVATORS

Not just one, but your choice of three models.

MODEL 405B (shown with AIRPLACO Sand-Loader and Model 1500 Nuc-retor)

MODEL 600 for high production. Can be used with any concrete gun.

MODEL 610 (shown with Model 1600-H Nuc-retor) like the 600 can be operated at any rate up to 12 cu. yds. per hour, it incorporates a built-in aggregate dryer for wet weather gunning.



FOR FAST, EFFICIENT, LOW-COST GUNNING OF CONCRETE AND REFRACTORIES

AIRPLACO BONDATORS AND NUCRETORS

There are six different Models in AIRPLACO'S complete line of concrete guns. Whatever your capacity requirements—from 1/2 to 8 cubic yards per hour—there is an AIRPLACO gun to meet your needs.



FOR EASY-TO-USE, VERSATILE
GROUTING AND PLACING

AIRPLACO PORTABLE GROUTER AND CONCRETE PLACER

The Model G-6 AIRPLACO Grouter is the answer to your grouting problems. Will place up to 5 cu. yds. per hour, is portable and has remarkably low air requirement. The Model CP-10 AIRPLACO Concrete Placer is designed for low cost bulk placement of structural concrete mix. Completely air operated.



FOR LOW-COST, EASY-TO-USE
SANDBLASTING (WET OR DRY)

AIRPLACO JET-BLASTERS

The Model B-6 single charge (650# capacity) and B-3 C continuous feed (500# capacity) Jet-Blasters are designed to handle all abrasive materials for cleaning, polishing, or etching of any type surface. The Jet-Blasters are available with accessories for wet or dry blasting and the new exclusive "Sand-Saver" remote cut-off valve.



Get a line on the AIRPLACO Line... Send for FREE CATALOG!



AIR PLACEMENT EQUIPMENT CO.

1007 WEST 24TH ST. • KANSAS CITY 8, MO.
MANUFACTURERS OF ADVANCED DESIGN CONCRETE GUNNING,
MIXING, GROUTING AND SANDBLASTING EQUIPMENT.

For more facts, use Request Card at page 18 and circle No. 505



Quick way to measure 90,000 gallons

Given a tight suction line and 10 ft. static lift, a 90M Rating Plate on a new pump guarantees that you can pump at least 90,000 gph (1500 gpm) against a 25 ft. head. Capacity at higher lifts and heads is certified by the same standards.

For pumps from as small as 4000 gph to as large as 125,000 gph, AGC standards and Rating Plates give you this needed information and guarantee its correctness. In addition, AGC standards guarantee ample engine power and up-to-date design to assure you of satisfactory service from any rated pump.



To maintain these helpful standards, demand the AGC Rating Plate on any pump you buy.

Demand this Rating Plate for your protection.

CONTRACTORS PUMP BUREAU

Affiliated with The Associated General Contractors of America
Munsey Building, Washington 4, D. C.

BARNES MFG. CO.
Mansfield, Ohio

C. H. & E. MFG. CO.
Milwaukee 12, Wisc.

CARVER PUMP CO.
Muscatine, Iowa

CHAIN BELT CO.
Milwaukee 1, Wisc.

CONSTRUCTION MCHY. CO.
Waterloo, Iowa

ESSICK MFG. CO.
Los Angeles, Calif.

PEERLESS PUMP DIVISION
Food Machinery & Chemical Corp.
Los Angeles 31, California

THE GORMAN-RUPP CO.
Mansfield, Ohio

THE JAEGER MACHINE CO.
Columbus, Ohio

JACUZZI BROS., INC.
Richmond, Calif.

MARLOW PUMPS
Div. of Bell & Gossett Co.
Midland Park, N. J.

McGOWAN PUMP DIVISION
Leyman Mfg. Co., Cincinnati 2, Ohio

RICE PUMP & MACH. CO.
Belgium, Wisc.

STERLING MACHY. CO.
Los Angeles, Calif.

WORTHINGTON CORPORATION, Contractor's Pump Division, Plainfield, N. J.

For more facts, use Request Card at page 18 and circle No. 506

TRIAL SAMPLES Of World-Famous WHITMORE'S Lubricants NOW IN AEROSOL SPRAY-ON CANS!



HANDI-LUBE LIQUID GEAR COMPOSITION

For open gears, sliding surfaces—exclusive formulas eliminate metal to metal contact, keep wear on the lubricant not the metal—no breakdown even after prolonged use under water—available for every climatic condition—packaged in handy 16-oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

65 YEARS OF LEADERSHIP LUBRICATING THE FOLLOWING:

- Open Gears, Dipper Sticks, Cams
- Enclosed Gear Cases
- Wire Rope and Cable
- Hydraulic Units, Torque Converters
- Roller, Ball, and Sleeve Bearings
- Speed Reducers



WIRE ROPE SPRAY LUBRICANT

Exclusive formulas for lubricating and protecting wire rope, chain, springs. Penetrates to the core of wire rope minimizing internal friction and increasing usable life up to 300%—special protective qualities absolutely eliminate corrosion—non-gumming qualities reduce "carry-back"—packaged in handy 16 oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.



Est. 1893
THE WHITMORE MANUFACTURING CO.
LUBRICATING ENGINEERS
CLEVELAND 4, OHIO, U.S.A. PHONE: VULCAN 3-7272

For more facts, use Request Card at page 18 and circle No. 507



At the demonstration ground, an HO Payloader proves its ability to back up a steep ramp, carrying a full bucket of dirt.

(Continued from preceding page)

side-boom tractors.

The idea behind "Payload Convoy West" was not entirely new. Recalling the depression days of the 1930's, G. A. Gilbertson, president of The Frank G. Hough Co., remembered a similar stunt in which a truck convoy of farm equipment was paraded through several midwestern states on its way from the International Harvester plant to distributors. This early convoy had not only been a profitable venture for the manufacturer and distributors, but was a real shot in the arm to the economy of the area.

Gilbertson and his staff sounded out their western distributors on repeating the convoy idea and received immediate and enthusiastic response. Preparations went into high gear, and in less than five weeks the convoy was on its way west. Distributors, enthused by the scheme, sold many of the machines before the convoy left the factory and more while it was en route. The few remaining rigs were easily absorbed into distributors' stocks.

The big job of organizing and marshaling the convoy of trucks—all of them Internationals—was handled by International Transport, Inc., Rochester, Minn. After the demonstrations at Salt Lake City, the convoy split up, and units continued on to Los Angeles; San Francisco; Portland; Vancouver, B. C.; and other points of delivery.

At the Salt Lake City meeting, Gilbertson acted as host to the assembled distributors and guests. Other executives at the meeting were H. O. Bercher, executive vice president of International Harvester Co.; T. F. Flood, vice president of The Frank G. Hough Co.; H. R. Brown, Hough regional manager; district managers Dave Hunsaker, Don Ross, Merle Fate and Don Conner, and Hough advertising manager Madison L. Crawford. Also present were Ralph Laurel, president of Ram Equipment Co.; Walter Hancock, sales manager of Wain-Roy Corp.; H. M. Kennedy and Paul Downend of The Superior Equipment Co.; and R. Theel, president of International Transport, Inc.

THE END

for
FASTER,
more
ACCURATE
HIGHWAY
MEASURING

USE A

ROLATAPE
MEASURING WHEEL



FOR HIGHWAY REPAIR

One man can measure as fast as he normally walks when using the Rolatape 400. Total is automatically recorded in full view of the operator.

HIGHWAY CONSTRUCTION

Rolatape's accuracy and speed are ideal for important measurements connected with estimating, daily progress reports and final inspection.

HIGHWAY MAINTENANCE

Street marking and sign placement require accurate measurements—the degree of accuracy you get with Rolatape's precision #400 wheel.

WRITE TODAY FOR
FULL DETAILS

ROLATAPE, INC.

1741 SANTA MONICA
14th ST. CALIFORNIA

For more facts, circle No. 508

CONTRACTORS AND ENGINEERS

Horace K. Church, earthmoving consultant for the Shepherd Machinery Co.



Shepherd Machinery news

Horace K. Church has joined the Shepherd Machinery Co., East Los Angeles, Calif., distributor of Caterpillar and John Deere equipment. As the firm's earthmoving consultant, he will be available to contractors in southern California.

Church has served as highway engineer with the U. S. Bureau of Public Roads, and research engineer with

the Keystone Driller Co. He has also been district representative and sales engineer, sales manager, and civil engineer with other organizations.

Buffalo-Springfield has two-day sales conference

The Buffalo-Springfield Roller Co., Division of Koehring Co., Springfield, Ohio, recently held a two-day national sales conference for over one hundred of its distributors and their sales personnel. The first day featured talks on market penetration and the application and uses of compaction tools; guest speaker was Kenneth B. Woods, head of the School of Civil Engineering, Purdue University, and a specialist in soil compaction. The second day of the session included a tour of the plant and demonstrations of new product developments.

The company has appointed contractors' Equipment & Supply Co., Albuquerque, the dealer for its complete line of rollers and compaction equipment in most of New Mexico.

Euclid appoints dealer

Pace-Euclid, Inc., 3001 N. 7th St. Trafficway, Kansas City, Kans., has been appointed a dealer for the Euclid Division, General Motors Corp., Cleveland, Ohio. Handling the complete line of Euclid scrapers, tractors, rear-dumps, and bottom-dump haulers, the dealer has a territory that includes nine Kansas counties east of and including Marshall, plus thirteen Missouri counties west of and including Putnam.

Cook Bros. names manager

Cook Bros. Equipment Co., Los Angeles, Calif., has appointed Robert Pierre manager of its Construction Machinery Division, Oakland. The division distributes the full line of American Hoist & Derrick Co.'s cranes and shovels; Schield Bantam cranes and shovels; Challenge truck mixers and concrete finishers; Chicago Pneumatic compressors and power tools; C. S. Johnson batch plants; Eagle Iron Works' rock-plant equipment; Pioneer rock plants and pavers; and Reo and Peterbilt trucks.

Chrysler division names two new distributors

The Marine & Industrial Engine Division, Chrysler Corp., Detroit, Mich., has appointed two new dealers. Godwin & Singer, 217 15th St., N., St. Petersburg, Fla., will serve five counties in the state. Industrial Engine Service Co., 38 S. Meridian Road, Youngstown, Ohio, will cover that city and Mahoning County.

B-L-H names new dealer

The Jaeger-Lembo Machine Corp., of Corona and Huntington, N. Y., has been appointed a dealer, in the metropolitan New York area, for Lima shovels and cranes, products of the Baldwin-Lima-Hamilton Corp., Lima, Ohio.



Buffalo-Springfield wound up its two-day national sales conference with firm executives accompanying distributors and their sales personnel on a plant tour.

NEW FOR YOUR CONVENIENCE... FLEXCO "25-PAK"



TWENTY-FIVE COMPLETE SETS OF FLEXCO HD BELT FASTENERS NOW AVAILABLE IN ONE EASY-TO-HANDLE ECONOMY BULK PACKAGE

There's no need now to carry several 10-set boxes to the job—every "25-PAK" contains 25 complete sets of FLEXCO Fasteners (bottom plates, top plates, clips, nuts and bolts) . . . enough FLEXCO Fasteners to join common belt widths (for example: one "25-PAK" box, size 1 1/2"E, will join a 36" belt.) Our savings from bulk-packaging are passed on to you! Label on each "25-PAK" box has chart indicating the number of FLEXCO HD Fasteners to use for given belt widths.



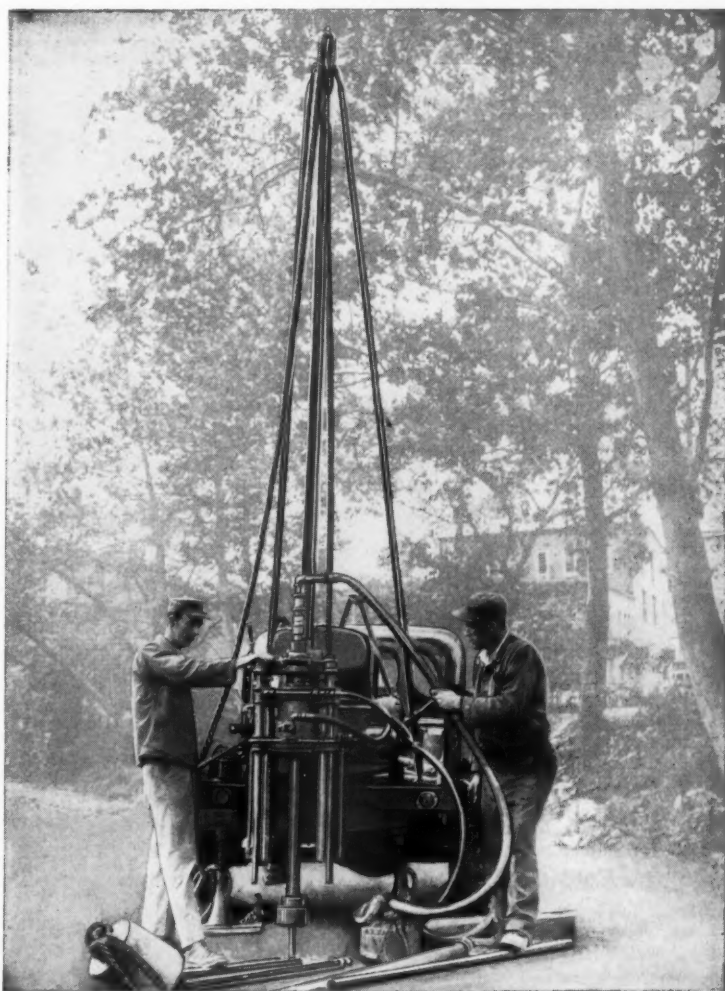
Standard shipping carton contains four "25-PAK" boxes of one size fastener. Keep a supply of "25-PAKS" on hand. Easy to store and inventory, sturdy boxes and shipping cartons have many uses.

Ask your FLEXCO distributor or write to us for additional information.

Flexible STEEL LACING COMPANY

4608 LEXINGTON ST. • CHICAGO 44, ILL.
FOR THE SPICE OF A LIFETIME

For more facts, circle No. 509



SPRAGUE & HENWOOD MAKES THE EQUIPMENT FOR THE SOIL SAMPLE OR ROCK CORE YOU WANT

With the earth-shaking increase in construction, you need efficient, versatile sampling and coring equipment.

Sprague & Henwood, Inc., a leading manufacturer of all types of equipment for foundation investigation, has just the right type for you!

Illustrated above, on location, is a truck-mounted Sprague & Henwood Model 30 Core Drill Machine. On this foundation project this machine is recovering both good samples and good cores. The soil samples have already been recovered from this boring and now the machine is being used to core rock. Because of the versatility and economy of this machine it is becoming a favorite of many

contractors and other users throughout America.

The proper machine alone will not give you the good soil samples and rock cores you want. You need just the right samplers, accessory equipment and coring bits. If you need a sampler to determine only the general classification of the sub-surface soils or a sampler to secure samples for testing in a soils laboratory, Sprague & Henwood has it. There is a complete line of accessory equipment and the best in "Oriented" Diamond Bits awaiting you. One call . . . to SPRAGUE & HENWOOD, Inc., and your drilling equipment needs can be met.

SPRAGUE & HENWOOD, Inc.



SCRANTON 2, PA.

BRANCH OFFICES: NEW YORK • PHILADELPHIA • PITTSBURGH • ATLANTA
GRAND JUNCTION, COLORADO • BUCHANS, NEWFOUNDLAND

EXPORT REP.: PHILIPS EXPORT CO., 100 EAST 42ND ST., N. Y. 17, N. Y. CABLE ADDRESS: PHILYORK

For more facts, use Request Card at page 18 and circle No. 510



Editor Bill Quirk left for the Third International Congress of Prestressed Concrete in Berlin and a Concrete Industries Study Tour of Europe, promising to send back first-hand impressions of construction overseas. His first letter to cross my desk was so interesting that I'll pass it right on. It bears the date line:

Berlin, May 11, 1958

Offhand I would say there are more people, in proportion to the population, engaged in construction in Berlin than in any city of the world. I said people, not men, because the women are doing hard physical labor, too. Kirche, kuche, and kinder (church, kitchen, and children) has not applied to the German frau and fraulein in years. The term "ruin woman" is a byword; it's used not in the past tense, meaning beyond the pale, but very much in the present—she picks her way among the rubble of a once magnificent city. The women sort over the stone and brick from the bombed-out buildings, chip mortar from the sound blocks, then stack them in piles. The Berlin of the past was built chiefly of brick or stone, and none of this rubble is wasted in the reconstruction.

Rubble that can be salvaged is picked up by cranes equipped with grapples, loaded into trucks (the

bigger ones are side-dumps), and hauled to several centrally located crushing sites. Locating sites for the crushing plants is no problem, since many areas are completely razed to the ground. Here, the rubble for immediate use is crushed or ground into various-size aggregate, screened, and stockpiled. This aggregate is used for all kinds of concrete construction—either poured-in-place work or in the manufacture of precast blocks, slabs, beams, girders, piles, light poles, columns, railroad ties, etc. The ground-up aggregate is usually produced in three sizes corresponding to our ¾-inch minus, ¼-inch minus, and sand. The material is rather porous and absorbs a lot of water. Consequently, either the stockpiles are drenched, or the needed water is added at the mixer.

Aggregate that cannot be used immediately is hauled to much larger open sites around the city, and piled up into what the Berliners call small mountains. The rubble is completely covered with dirt and seeded with grass, flower, and even tree seeds. These man-made hills are a pleasant sight rising out of the flat plain on which Berlin was built. The highest point in the city is only 79 meters above sea level. At the present rate of reconstruction, the stockpiles of rubble will be depleted in two or three years. Then will come the serious

Hold down cost of concrete bridge piers!



Clear Creek Canyon overpass, Idaho Springs, Col. James B. Kenney, Denver, Col., contractors.

Use low-cost **SONOCO** *Sonotube®* **FIBRE FORMS**

Save time, labor and money with Sonotube Fibre Forms! These easy-to-handle forms require minimum bracing and save many man-hours on the job.

Low-cost Sonoco Sonotube Fibre Forms provide the quickest and most economical means of forming round columns of concrete.

Contractors all over the country are using Sonotube Fibre Forms in the construction of piers for bridges, overpasses and grade separations.

These fibre forms are widely used also to form underpinning and supporting columns in buildings of all types.

Available from 2" to 48" I.D. up to 48' long. Order in specified lengths or saw to size on the job. Sonoco's patented "A" coated fibre forms are for finished columns; wax-coated also available.

See our catalog in Sweet's
For complete information and prices, write

- HARTSVILLE, S. C.
- LA PUENTE, CALIF.
- MONTCLAIR, N. J.
- AKRON, INDIANA
- LONGVIEW, TEXAS
- ATLANTA, GA.
- BRANTFORD, ONT.
- MEXICO, D.F.

SONOCO
Construction Products

2845

SONOCO PRODUCTS COMPANY

For more facts, use Request Card at page 18 and circle No. 511

keep 'em on the job with IGLOO



on the spot cool water pays off for the Memphis, Tenn., Light, Gas and Water Division field units.

More men on the job more of the time is the result of adding IGLOO water coolers on your construction jobs. The workers like IGLOO best because—

- It's CRYSTALINED, keeps liquids pure • It has round sanitary bottom, easy to clean • It has recessed dripless spigot
- Its insulation qualities are 18% greater • It's stronger and lasts longer.

Keep 'em on the job with IGLOO

ask for it by name **IGLOO CORPORATION**
P. O. BOX 8227 • MEMPHIS 4, TENN.

For more facts, use Request Card at page 18 and circle No. 512

STOP that WATER

A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—hold 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs. Applied quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.

HAYNES PRODUCTS CO., OMAHA 3, NEBR.
With FORMULA No. 640

Now!

BUY used equipment
SELL used equipment
ACQUIRE competent personnel
Use a classified ad in
CONTRACTORS & ENGINEERS

CONTRACTORS AND ENGINEERS

problem of an aggregate shortage, if the existing political situation is not remedied.

As you know, Berlin is a divided city, with the western section like an island surrounded by Communist-controlled East Berlin and East Germany. Only three highways are open to West Germany, and over these roads come the supplies that keep West Berlin alive. And since these highways are owned and controlled by East Germany, a high levy is placed on everything that enters or leaves West Berlin. For many reasons, including that of the limited aggregate supply, the West Berliners hope for an improvement in the political climate.

The city divided is also responsible for the subway construction now under way in the western part of the city. The present Untergrund, or U-Bahn, running north and south leaves the western part of the city and enters East Berlin. Consequently, difficulties develop at the check points, and many West Berliners are wary of entering East Berlin at all. The new subway will connect the northern and southern portions of West Berlin without touching the soil of East Berlin.

Also under construction is a 25-mile expressway ringing West Berlin. It will be limited access with all kinds of tangential and access roads and, of course, a diversity of bridge and grade-separation structures. Berlin was a natural spot for the Third International Congress of Prestressed Concrete, particularly with all the building and bridge construction under way. Some 1,500 representatives

from 41 countries have attended the sessions this week.

We were a day late in arriving at Berlin. Instead of leaving Idlewild last Saturday night (May 3) at 9:30 p.m., as originally scheduled, we didn't get away until 3:15 Sunday morning. We had taxied out to the runway, and the engines were revved up; then the captain announced that valves on one of the engines were sticking and we would go back to the ramp for an overhaul. We also made a stop at Sydney, Nova Scotia, for refueling, that was not planned originally. From Amsterdam we flew to Koln-Bonn Airport, spent Sunday night at Bad Godesburg, and came on to Berlin Monday morning.

Saw a bit of Bonn, where several of the big slewing cranes (as described in our June issue) were at work. These big cranes—Universal and other makes—are a common sight in both West and East Berlin.

Only three airlines serve Berlin from the west, one for each of the allied nations—Great Britain, France, and the U. S. A. We leave this interesting city via Pan American to go to Hamburg, and then Stockholm.

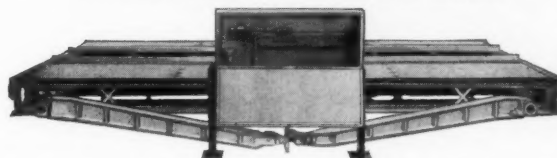
Best regards,
Bill

Right now we're waiting for more letters from other points on Bill's itinerary—and we're waiting for the more detailed stories he'll be getting ready for our prestressed-concrete issue in September.

Don Butterheim
PUBLISHER

WINSLOW—PORTABLE TRUCK SCALE

THE CONTRACTORS' SPECIAL SCALE



For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacity: 15-18-20-30, 50 tons.

Write us for name of your nearest distributor

WINSLOW SCALE COMPANY

P.O. Box 1198
Terre Haute, Indiana

For more facts, use Request Card at page 18 and circle No. 514

here's real news...

NEW FLASHER SAFETY LIGHT

DEPENDA-PAK TIMER



Dependa-Pak electro-mechanical flash timer has quick-alignment plug positioning marker on socket for fast, fool-proof connection of match-marked wiring plug.

For the best in money-saving hazard warning protection and exclusive guaranteed dependability, choose Fageol Flasher Safety Lights!

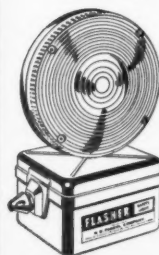
Powered by a long-life 8-cell battery, Fageol Flasher Safety Lights provide over 100 brilliant flashes per minute, visible as far as 2 miles... operate continuously up to 90 days between battery changes... feature heavy-duty, shock-resistant construction... discourage vandals... flash without fail, even in driving rain and high winds.

Best of all, the new Depend-a-Pak

timer is fully guaranteed against failure for an entire year, in normal service. Its rugged electro-mechanical flash timing and power boosting mechanism has been performance-proved in millions of hours of service in similar applications. Depend-a-Paks require no field service or adjustment!

Your nearby distributor will be glad to show you how Flasher Safety Lights and matching Barricades can give you dependable hazard warning protection—at much lower cost than out-dated methods. Call him today!

R. D. Fageol Company, Kent, Ohio. AA-5674



UNI-DIRECTIONAL FLASHER LIGHT



COMPACT ALL-STEEL FOLDING BARRICADE



TWO-WAY FLASHER LIGHT

For more facts, use Request Card at page 18 and circle No. 515

It's more than just an arc welder!

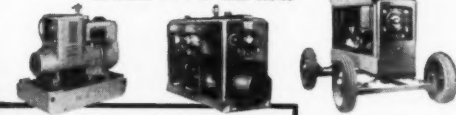


Operate tools, lights, motors, etc.

Use your own men. Do your own repair and construction work right on the job and keep valuable equipment working. Save hundreds of dollars on replacement parts and avoid costly delays. Always ready—welds anywhere. Provides emergency 110 AC power when and where you need it.

HOBART BROS. COMPANY,
BOX TROY, OHIO
Phone Federal 2-1223

A wide selection of types and sizes
air-cooled... or water-cooled



"Husky Boy" "Contractor's Special" "Gas Drive"

Hobart "One of the world's largest builders of arc welding equipment."

CHECK for free Welder's Vest Pocket Guide

Write for information on Hobart Welding School

HOBART TROY OHIO WELDERS

Hobart Brothers Co., Box 868 Troy, Ohio
Please send me current information, without obligation, on the following checked items:

☐ "Husky Boy" ☐ "Contractor's Special"

☐ "Gas Drive" ☐ Check here if you wish free copy of Welder's Vest Pocket Guide ☐ Welding School

Name _____ Position _____

Firm _____

Address _____

For more facts, use coupon, or Request Card at page 18 and circle No. 513

INDEX TO ADVERTISERS

Air Placement Equip. Co.	169
Alexander Mfg. Co.	95
Allis Chalmers Mfg. Co.	Insert at p. 88
American Cyanamid Co.	114
American Steel & Wire Div.	54, 55
Armco Drainage & Metal Products, Inc.	36
Associates Discount Corp.	71
Athey Products Corp.	10
Austin-Western Works, Constr. Equip. Div., Baldwin-Lima-Hamilton Corp.	147
Baker-Ross, Inc.	159
Baldwin-Lima-Hamilton Corp.	160
Band-It Co.	157

Beaver-Advance Corp.	164
Bethlehem Steel Co.	78
Bil-Jax, Inc.	130
Black & Decker Mfg. Co.	101, 108
Braden Winch Co.	117
Bros Incorporated	135
Browning Mfg. Co.	167
Brush Aboe, Inc.	166
Buck Equipment Corp.	156
Bucyrus-Erie Co.	69
Buffalo-Springfield Div., Koehring Co.	120
Campbell Detachable Cab Co.	158
Canton Mfg. Co.	156
Cardox Corp.	88
Carver, Inc., Fred S.	152
Caterpillar Tractor Co.	7, 14, 24, 25, 72, 73, 149
Cemco Industries, Inc.	138
Chevrolet Div., GMC	41
Chicago Pneumatic Tool Co.	63

Cimco	123
C.I.T. Corp.	44, 45
Clark Equipment Co.	4th Cover
Clement-Braswell, Inc.	30
Cleveland Formgrader Co.	64
Cleveland Trencher Co.	131
Clipper Mfg. Co.	58
Clyde Iron Works, Inc.	129
Colorado Fuel & Iron Corp.	161
Columbus McKinnon Chain Corp.	162
Concut Sales, Inc.	162
Consolidated Diamond Tool Corp.	176
Construction Machinery Co.	100
Continental Rubber Works	20
Contractors Pump Bureau	170
Davey Compressor Co.	160
Denison Engineering Div.	150
Diamond Chain Co., Inc.	106
Diesel Energy Corp.	169
Dodge Corp., F. W.	98
Dotmar Industries, Inc.	174

Douglas Fir Plywood Association	82, 83
Drott Mfg. Corp.	37
Dudgeon, Inc., Richard	144
Duff-Norton Co.	148
Duo Safety Ladder Corp.	158
Economy Forms Corp.	21
Eimco Corp.	28
Etnyre & Co., E.D.	110
Euclid Div., GMC	53, 105
Fageol Co., R.D.	173
Farrell-Cheek Steel Co.	159
Felker Mfg. Co.	121
Firestone Tire & Rubber Co.	22
Flexible Steel Lacing Co.	171
Food Mach. & Chem. Corp.	130
Ford Div., Ford Motor Co.	19
Forney's, Inc.	135
Foster Co., L.B.	49
Frederick Iron & Steel, Inc.	131
Fruehauf Trailer Co.	86, 87
Fuller Mfg. Co.	109



NOW!
PAVING EQUIPMENT THAT
IS ECONOMICAL TO BUY
AND OPERATE!

ROLA PAVER

4 PAVER TYPES

- BASE
- STANDARD
- COMBINATION
- * TRENCH



SPREADS BASE MATERIALS —UP TO 8" DEPTHS

(15 to 20 big truck loads per hour)

The big Rola Base Paver guarantees you a top quality job, with economical operating cost, for spreading base materials. No blading is necessary because of the Rola's quick operating screw adjustments that permit accurate depth control. Spreading up to 200 tons of crusher run base per hour is not unusual. Mixes that will discharge freely from the dump truck can be spread easily and speedily by the Rola Base Paver.

SPREADS ASPHALTIC MIXES DOWN TO 1/4" DEPTHS

Street resurfacing is an economical and speedy operation with the Rola Paver. Many small municipalities rely on the Rola's efficiency for street maintenance to work within tight budgets. The Rola gives 25% compaction by its own weight on the initial spread. Quick repairs to damaged pavements is a smooth and easy operation with the Rola. Screed plate butane heaters are available as accessory equipment.

* PAVES TRENCHES AT SPEEDS UP TO 1,000 FEET PER HOUR
DEPENDING ON WORKING CONDITIONS

FREE Write today for full information on the economical and efficient ROLA PAVER!

watson metco

BETTER EQUIPMENT FOR PLACING
AND FINISHING CONCRETE...

MANUFACTURED BY
CREATIVE METALS CORP.
exclusively for

Power Buggies • Telescoping and
Economy Vibratory Screeds
Rola Pavers and Trench Boxes
Wood and Steel Tilt-Up Hardware
Bull Floats • Hoppers
Elephant Trunks and Chutes
Tampers • Hand Carts

H. S. WATSON COMPANY
1316 - 67th Street
EMERYVILLE, CALIFORNIA
TOLEDO, OHIO

For more facts, circle No. 516



Harbormaster
the complete, heavy-duty
marine power and steering
package

easily installed, rugged,
economical, highly maneuverable

Harbormaster Outboard Propulsion and Steering gives your craft rugged power, plus complete 360° maneuverability and the advantages of low cost installation, operation and maintenance.

Harbormasters are easily installed for immediate use and are a ready answer to many tough marine problems. They are ideal in shallow or deep water... for coastwise service as well as in harbors, lakes, canals, and rivers.

Harbormasters have been proved in hundreds of installations. Send for your copy of catalog which gives complete details.

MURRAY & TREGURTHA, INC.
44 Hancock St., Quincy 71, Massachusetts

For more facts, circle No. 517

YOU CAN BID LOWER AND MAKE MORE PROFIT with a DOTMAR Curb, Gutter, Sidewalk Paver!

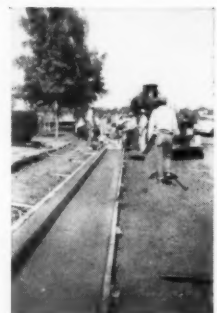


Dotmar Paver with extensions paves integral gutter, curb and sidewalk.

Dotmar with extensions paves state highway median strip.



Dotmar paves gutter on expressway. A truly versatile machine.



Dotmar paves curb and gutter, over 8' per minute. Total job 14 miles long.

Hundreds of contractors are cutting costs and increasing profits with a Dotmar Paver. Pays for itself in first mile of paving. Greater concrete yield. Easy to operate. Trowels for any shape of curb, gutter, sidewalk or highway strip. Send for Catalog 57

Makers of Dotmar Magnesium Forms,
Brush Cutters and Roadside Seed Bedders.

Dotmar INDUSTRIES Inc.

519 HANSELMAN BUILDING

KALAMAZOO, MICHIGAN

For more facts, use Request Card at page 18 and circle No. 518

CONTRACTORS AND ENGINEERS

Industrial Cab Co. 128
Ingersoll-Rand Co. 146
International Harvester Co. 34, 35, 37
International Harvester Co. (Trucks) 112, 113

Jackson Vibrators, Inc. 70
Jaeger Machine Co. 157
Jay Co. 26
John Deere Indus. Div. 18

Ka-Mo Tools, Inc. 158
Kano Laboratories 132
Kelley Machine Div. 165
Koehring Co. 118, 119
Kohler Co. 76
Kolman Mfg. Co. 116

LeTourneau-Westinghouse Co. 77, 79, 81
Limbacher Paint & Color Works 160

Lima Works, Constr. Equip. Div., Baldwin-Lima-Hamilton Corp. 160
Lippmann Engineering Works, Inc. 94
Littleford Bros., Inc. Insert at p. 38
Loadmaster Co. 136

Mack Trucks, Inc. 102, 103
Madsen Works, Constr. Equip. Div., Baldwin-Lima-Hamilton Corp. 151
Maginniss Power Tool Co. 20, 68
Marlow Pumps, Div. Bell & Gossett Co. 50
Marvel Engineering Co. 161
Massey-Ferguson Indus. Div. 23
Master Vibrator Co. 125
McKiernan-Terry Corp. 62
McKinney Drilling Co. 142
McKissick Products Corp. 17
Meadows, Inc., W. R. Mechanics Universal Joint Div. 115
Memphis Equipment Co. 140
Mercury Clutch Div., Automatic Steel Prdts 127
Miller Electric Mfg. Co., Inc. 95
Miller Tilt-Top Trailer Co. 168
Morse-Starrett Products Co. 163
Motorola, Inc. 13
Muller Machinery Co. 104
Murray & Tregurtha, Inc. 174

Napco Industries, Inc. 97
Naylor Pipe Co. 107

Oliver Corp. 154
Olsen Testing Machine Co., Tinius 104
Owatonna Tool Co. 168

Parco Products Co. 167
Phoenix Products Co. 175
Plan Hold Corp. 108
Posey Iron Works, Inc. 138
Power-Pack Conveyor Co. 104
Prehy Company 138
Press' Sons, Inc., Jacob 134
Prewitt & Sons, Inc., J. R. 146
Prime-Mover Co. 139
Punch-Lok Co. 140

Quinn Wire & Iron Works 155

Richmond Screw Anchor Co., Inc. 175
Robbins Machine & Mfg. Co., Inc. 48
Rockford Clutch Div. 165
Roebing's Sons Corp., J. A. 124
Rogers Co., E. A. 130
Rotatope, Inc. 170
Rosco Mfg. Co. 156

Safe-T-Flare Corp. 130
Sasgen Derrick Co. 124
Schlueter Mfg. Co. 140
Service Machinery Corp. 136
Sight Feed Generator Co. 166
Simplicity System Co. 145
Sinclair Refining Co. 31
Slope-Meter Co. 64
Socony Mobil Oil Co., Inc. 12
Sonoco Products Co. 172
Southwest Welding & Mfg. Co. 38
Sprague & Henwood, Inc. 171
Spartan Aircraft Co. 61
Stanco Mfg. & Sales, Inc. 134
Standard Oil Co. (Asphalt) 85
Standard Oil Co. (Automotive) 66, 67
Standard Steel Works, Inc. 110
Stang Corp., John W. 132
Stardrill-Keystone Co. 94
Superior-Lidgerwood-Mundy Corp. 143
Sure-Seal Equip. Co. 134

Swenson Spreader & Mfg. Co. 161
Symons Clamp & Mfg. Co. 129

Tampo Mfg. Co. 162
Texas Co. (Asphalt) 5
Texas Co. (Lubricants) 8, 9
Thew Shovel Co. 15
Thurman Scale Co. 100
Truco Masonry Drilling Div., Wheel Trueing Co. 163
Twin Disc Clutch Co. 51

U.N. Co., Inc. 128
Union Metal Mfg. Co. 137
Unit Crane & Shovel Corp. 122
U.S. Envelope Co. 65
U.S. Steel Subsidiaries 54, 55, 57
Universal Atlas Cement Co. 57
Universal Form Clamp Co. 52
Utica Div., Curtiss-Wright Corp. 93

Victor Equipment Co. 133
Vulcan Iron Works, Inc. 80
Vulcan Tool Mfg. Co. 108

Wallace Supplies Mfg. Co. 163
Watson Co., H. S. 174
Waukesha Motor Co. 139
Wheel Trueing Co. 163
White Mfg. Co. 122
Whitehead Stamping Co. 164
Whitmore Mfg. Co. 170
Wickwire Spencer Steel Div., CF&I Corp. 161
Williams Form Engineering 59
Winslow Scale Co. 171
Wisconsin Motor Corp. 116
Wisconsin Trailer Co. 165
Wix Corp. 142
Wyoming Valley Equip. Div. 145

Yale & Towne Mfg. Co. 3rd Cover

NEW!

Vibration-free Long-throw FLOOD LIGHT



STURDILITE
Longer life-brighter lighting



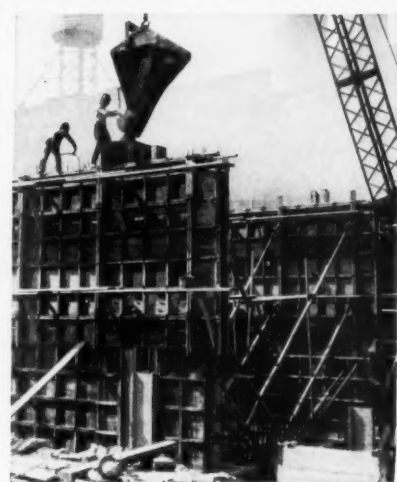
STURDILITE stays lit, stays bright, longer than most conventional floodlights. Mounted in an exclusive "floating" suspension, it's as vibration-proof as modern science can make it. And that means less lamp replacement, lower maintenance and better lighting for you.

Other new, advanced features are: hinged-hood visor with toggle latch for quick opening... heavy steel 1-piece spun hood, trunnion mounted for full rotation and universal aim... choice of lighting in spot, medium, flood, wide flood and oval beam in 10,000 to 70,000 CP 110-125V 300 watts output. Bond-erized and 2-coat enameled. Ready wired. New literature now ready. Write

PHOENIX PRODUCTS COMPANY
4727 N. 27th St., Milwaukee 9, Wis.
For more facts, circle No. 519

CUT CONCRETING COSTS WITH Richmond FORMING METHODS

You can save time and money by making forms with your lumber and Richmond Form-Tys and Accessories.



Setting, pouring and stripping forms goes faster when you use the Richmond Snap-Ty Form System. With this system you

can build your own prefabricated panels. Form erection is reduced to an assembly procedure of the reusable low cost panels into durable forms suitable for continuous pours.

RICHMOND SNAP-TYS

FOR TYING LIGHT CONCRETE FORMWORK

1/2" or 1" BREAK SNAP-TY ASSEMBLY—3000 LB. OR 5000 LB. SAFE LOAD

Richmond Snap-Tys are specifically designed for quick, easy and accurate erection of light foundation wall forms. With Richmond accessories they will give you a worthwhile saving from start to finish.

Spreader washers of ample size are precisely located to give the exact wall thickness. Head washers of special steel are securely held by a clean, well formed upset on each end of the tie to give positive bearing on the Tyholder, thus transmitting the full strength of the Snap-Ty to the walers and preventing the possibility of costly breaks.

Break points are set back from the wall face to permit easy, clean stripping and prevent spalling of the concrete. The small tie holes and indentations of the washers, or cones if they are used, are easily pointed.

Richmond Snap-Tys are available with safe loads of 3,000 lbs. and 5,000 lbs.

Richmond does not make, sell or rent forms. Richmond sells Form-Tys and accessories and shows you how to make your own forms which can be used over and over. Profit by this fast, easy method for erecting light foundation walls. Send for your FREE copy of the Richmond Snap-Ty Form Book, containing complete diagrams and forming data. At the same time, ask for the current Richmond Handbook, which describes the full line of Richmond-engineered tying devices and accessories.

Write to: Richmond Screw Anchor Company, Inc.
816-838 Liberty Ave., Brooklyn 8, N.Y.
or 315 South Fourth St., St. Joseph, Mo.

Some of the new accessories developed by Richmond for easy on-the-job assembly of prefabricated modular form panels.

For more facts, use Request Card at page 18 and circle No. 520

M anufacturer memos



George J. Pecaro, newly elected president of Flintkote Co.

Flintkote elects two new top executives

George J. Pecaro has been elected president of the Flintkote Co., New York City, succeeding Perce C. Rowe, who resigned. Pecaro, a member of



George K. McKenzie, new executive vice president of Flintkote Co.

the building-materials firm for nearly 20 years and executive vice president since April, 1957, has been active in Flintkote's recent expansion program, which included a number of acquisitions and new plant construction.

George K. McKenzie has been elected executive vice president, succeeding Pecaro. McKenzie, former vice president, continues as secretary of the company.

William Feick, Jr., is the newly elected vice president. He will continue as treasurer, an office he has held for the past two years.

New president for Goodman and Diamond Iron Works

Howard Goodman has been elected president and chief executive officer of the Goodman Mfg. Co. and its division, Diamond Iron Works, both of Chicago, Ill. He succeeds William E. Goodman, who continues as chairman of the board.

Both men are sons of the founder of the 58-year-old firm, which produces mining machinery. Diamond Iron Works manufactures crushing and handling equipment for the aggregate-producing industry.



William D. Lease, newly elected executive vice president and member of the board of directors of Athey Products Corp.

Athey elects executive VP; new domestic sales mgr.

William D. Lease has been elected executive vice president and a member of the board of directors of Athey Products Corp., Chicago, Ill. He was formerly vice president of sales, in charge of the company's sales work throughout the world. Lease has also been plant engineer and manager of research and development.

U. S. PATENTS #2,818,850 AND #2,815,746



**ONLY CONSOLIDATED* can offer you
TUNGSTEN CARBIDE BONDED diamond blades
...AND FLAT BOTTOM SEGMENTS**

There is only one Tungsten Carbide Bond and it's manufactured under Consolidated Diamond Tool patents. From soft limestone to flint...from Vermont marble to insulating brick, there hasn't been a blade made that can equal the Tungsten Carbide Bond. Cheaper in initial cost, and up to 51% savings per foot, TCB blades cut faster, last longer... maintain uniform width.

Every time you order blades always specify Tungsten Carbide Bonded—look for the name on the blade. Save on blank repair bills too, specify the patented flat bottom segments. For further information see your local dealer, or write Consolidated Diamond Tool Corporation, 320 Yonkers Avenue, Yonkers, N.Y.

CONSOLIDATED DIAMOND TOOL CORPORATION

*OR A COMPANY WHICH HAS BEEN LICENSED BY CONSOLIDATED DIAMOND TOOL TO MANUFACTURE UNDER THEIR PATENTS

For more facts, use Request Card at page 18 and circle No. 521

Guy F. Roll, domestic sales manager of Athey Products Corp.



Guy F. Roll has been appointed domestic sales manager of the company. A 17-year member of the firm, he was previously district representative in the Northwest and Southwest, with headquarters in San Francisco.

Chain Belt elects Carpenter president

O. W. Carpenter has been elected president of the Chain Belt Co., Milwaukee, Wis. A 15-year member of

O. W. Carpenter, newly elected president of Chain Belt Co.



the firm, Carpenter has served as vice president in charge of finance, treasurer, vice president of construction machinery and finance, and executive vice president.

The retiring president, L. B. McKnight, will remain active in company affairs. Continuing as a director of the firm, he will also serve as chairman of the executive committee of the board of directors.

Caterpillar elects

Executive vice president Charles A. Woodley has been elected to the board of directors of the Caterpillar Tractor Co., Peoria, Ill. He fills the vacancy created by the death of A. L. Chickering. Woodley, a 38-year member of the company, has served as general factory manager, Peoria plant manager, and vice president.

Andrew R. Timmerman and Trevor C. Roberts have been appointed market specialists in the general construction market section of the Sales Development Division of the company.

CONTRACTORS AND ENGINEERS

Meet The Newest, Largest Power Package from YALE & TOWNE

...THE **TROJAN** 4 CU. YD. MODEL 404

Newest and largest — this describes perfectly the Trojan Model 404 tractor shovel . . . This 4 cu. yd. power package is a machine that will top the operating demands of even the hardest users . . . and deliver tremendous yardages with minimum effort . . . Like the 154, 104 and LHM-75, the same high standards of workmanship and materials have gone into the new '404' plus the ability to deliver the same superior performance on the really big jobs. Like all Trojan models, safety is of prime concern and the '404' also features reverse curve safety arms and such job-proven operating aids as low-load carrying position, independent bucket action, straight line horizontal thrust, automatic neutral return and four wheel air brakes . . . Power is supplied by a GM series 6-71 diesel — an economical, low-maintenance power supply. Ask for a '404' demonstration any place — any time!



TROJAN*
*REG. U. S. PAT. OFF.

TRACTOR SHOVELS

YALE & TOWNE

2 & 4 Wheel Drive Front-End Loaders

CONTRACTORS MACHINERY DIV., THE YALE & TOWNE MANUFACTURING COMPANY, BATAVIA, NEW YORK; SAN LEANDRO, CALIFORNIA

For more facts, use Request Card at page 18 and circle No. 522



25 ton truck crane pours concrete at 75 ft radius

This 25 ton Michigan Truck Crane, with 1 yd bucket and 95 ft of boom, has poured footings at a 75 ft radius.

Equipped with half-yard clam and 70 ft boom, it has wrecked masonry structures.

On the job shown, at Malmstrom Air Base, Great Falls, Montana, it handled structural steel, wood form placement, and concrete pouring for *four big* ammunition storage buildings. Concrete vol-

ume for the buildings and 14 end walls totalled 4,200 cu yds. Pour rate on the \$897,000 contract averaged 18 to 20 one-yard buckets per hour.

Takes only minutes to prepare for highway travel

The Michigan's owner, Sletten Construction Company, Great Falls, use their rig for *all sorts* of crane operations. "We like its speed *on the job* (and *between jobs*)," says Glenn Carpenter, company v.p. "For highway travel, we have only to shorten the boom to get going." Typical 5 to 6 mile trips through Great Falls usually require only 20 to 30 minutes. A longer move, 120 miles, was completed in under 4 hours.

"Good sales-service sold us on Michigan"

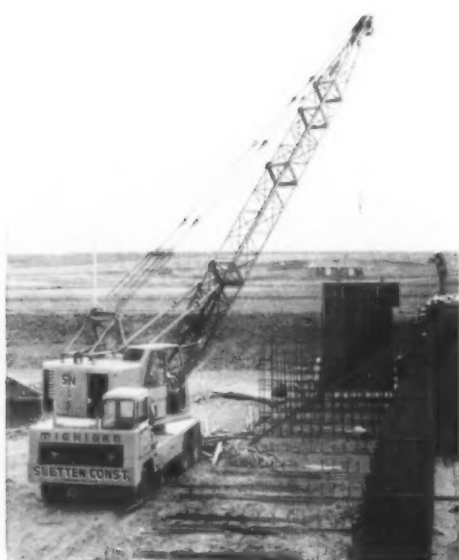
"We bought the Michigan," continues Mr. Carpenter, "because, like all Michigan Distributor salesmen we know, our present representative worked right with us and helped us determine just what we needed. We've been pleased, too, with the service we've had from Miller Machinery Co., our Michigan Distributor. And some of those standard Michigan features can't be beat—like power up and

power down on both boom and hoist line."

In 9 months, no loss of working time

"Efficiency is tops too," says Supt. Ben Liebelt. "In 9 months (1,500 work hours), we've had no mechanical troubles, never had to cancel scheduled work. We've gotten more work done in these hours, also, because of Michigan's dual control. It enables our operator to drive away with a moderate load on the boom *without leaving the crane cab.*"

Ask your Michigan Distributor to show you how Michigan dual controls, speed, and efficiency could help brighten your profit picture. There's a model to fit your needs: 10, 15, 25 tons.



Easy-handling positive crane controls speed removal of forms after concrete has hardened.

Michigan is a registered trademark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division
2407 Pipestone Road
Benton Harbor 15, Michigan

In Canada: Canadian Clark, Ltd.
St. Thomas, Ontario

CLARK®
EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 523

ete

and hoist

ys Supt.
600 work
cal trou-
ed work.
in these
an's dual
to drive
ne boom

r to *shou*
s, speed,
ten *your*
el to fit

MPANY